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THE PROBLEM OF DISENCHANTMENT

Scientific Naturalism and Esoteric Discourse, 1900–1939

Egil Asprem



The Problem of Disenchantment: Scientific Naturalism and Esoteric Discourse, 1900-1939

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aan de Universiteit van Amsterdam
op gezag van de Rector Magnificus
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ingestelde commissie,
in het openbaar te verdedigen in de Agnietenkapel
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Egil Asprem

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Faculteit der Geesteswetenschappen

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Somewhere in this book I borrow the argument of Bruno Latour that the real agency behind any single achievement in science and scholarship is broadly distributed in an "actor-network": it is deceptive to identify singular achievements with singular agents, such as the name occurring on the front cover of a book, or the recipient of a prize of scientific merit. It would be naïve or dishonest to deny that this situation obtains also in my own case. "Egil Asprem" is but a nodal point in the broad actor-network that conspired to produce the present work (even though, as the author, he likes to believe he is at the very least one of the most central nodes in the network). It is, at any rate, the case that those who invoke actor-network theory in historical analyses of scientific work has an extra obligation to write a proper acknowledgement section prefacing their own work.

This book is the result of four years' doctoral work at the University of Amsterdam. However, the breadth of its scope also reflects a much longer intellectual journey that started about ten years ago, with my parallel studies in the philosophy of science and the history of religion at the Norwegian University of Science and Technology in Trondheim, Norway. My memory is hardly reliable enough to guarantee that due credit is given to all contributors along this decade long path – the agent's point of view is, after all, limited. Thus the following acknowledgments are not meant to be exhaustive, but to cover some persons and institutions whose input, influence, and contributions to the actual process of researching, writing, and editing this work I simply cannot avoid mentioning.

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Amsterdam, December 2012

Introduction:
The Limits of Reason

Nature *is* false; but I'm a bit of a liar myself.

Aleister Crowley, *The Book of Lies*, ch. 79.

This is a book about people who have walked the outer limits of reason. Some of them were eminent natural scientists, some were philosophers, while others were steeped in the currents of occultism. They all shared an opposition to certain epistemological presuppositions that had been dominant since the Age of the Enlightenment. They re-visited fundamental questions concerning the possibility of metaphysics, freedom of will, and the explicability of the natural world. They redrew the relations between facts and values, mechanism and purpose, and science and religion. The solutions our protagonists came up with often appear heterodox when judged against the received view of Enlightenment thought. Yet, their ostensibly deviant responses were all formulated in the middle of one of the most extraordinary periods of scientific development in recorded human history. Indeed, some of our protagonists contributed directly to that very development.

The core argument of this book concerns the famous thesis attributed to Max Weber that a process of intellectualisation and rationalisation has led to the disenchantment of the world. A close reading of the passages that Weber's interpreters have used to extract a thesis on the "process of disenchantment" show that disenchantment (*Entzauberung*) concerned much more than simply the disappearance of "magic" and "sorcery" (*Zauber*). For Weber, the disenchantment of the world meant above all that people's epistemic attitudes towards the world had changed: they did not anymore expect to encounter genuinely capricious forces in nature, thinking instead that everything could in principle be explained. But the explicability of the natural world came at a price, according to Weber, for it also meant that there could be no natural, factual, this-worldly foundation for answering questions of meaning, value, or how to live one's life. The disenchanted mentality was optimistic about acquiring knowledge of nature, but pessimistic about knowledge of values and metaphysics. Moreover, religion now had to rely on the strictest transcendence in order to be valid: any numinous,

divine presence in the world had to go, together with the spirits and occult powers of the sorcerers. Those who still wanted religion had to undergo an intellectual sacrifice, admitting that they could never justify their beliefs and practices with appeal to reason, evidence, or fact. These were the consequences of the disenchantment process: the natural world could be explained perfectly, but nothing could be known for certain about those questions that concerned "worldviews". Anyone who *claimed* to know, appealing to reason and evidence in places where they do not to apply, were either charlatans or victims of self-deceit.[1]

The people we are about to meet did not share these views. We find scientists who did not believe that the natural world could be fully explained, and others who found the basis for theological arguments in new scientific discoveries. We find people straddling the boundaries of the occult and the scientific, stubbornly bent on creating new methods for the empirical study of the "supernatural". Some of these would-be "charlatans" walked in the shadows of the modern academy, publishing their work in obscure occultist journals and carrying out their "research" in occult lodges and societies – no doubt confirming Weber's intuitions. But among the dissidents we also count university professors and Nobel laureates, in fields as diverse as physics, chemistry, physiology, and literature. The modern academy and especially the natural sciences were supposed to have been the very engine of the disenchantment process, so what happened?

My starting point is that the disenchantment thesis grasps something important about modern Western intellectual history, but that it has been poorly theorised and much overstated. A blind spot has been created by the disenchantment thesis, covering a vast and significant set of tendencies that do not fit the narrative that the process implies. The main problem is that the thesis does not sufficiently acknowledge or account for the plurality of epistemological positions available within post-Enlightenment intellectual culture. An understanding of the complexity of the modern academy and its role in modern societies has been sacrificed for a view that prioritises certain intellectual identities. The "disenchantment process" gives priority to a specific set of cultural impulses, above all Protestant theology and Kantian philosophy. Both

[1] Weber, 'Wissenschaft als Beruf', 509.

have no doubt been extremely important in forming the mental life of high modernity, but they should not be assumed to have been uniformly victorious.

In this book I propose to abandon the notion of disenchantment as a socio-historical *process*, and instead reconceptualise it as a specific intellectual and cultural *problem* faced by historical actors. This move may in fact make "disenchantment" more consistent with Weber's broader methodological project: it prioritises the agency of *individuals* above the machinations of nebulous structural processes (i.e., "methodological individualism"), and it implies an approach to history along the lines of *Problemgeschichte*.[2] The historian does not merely describe "the facts", or even generalise from such facts, in order to find out "*wie es eigentlich gewesen*"; instead, he selects, builds, and orders history in terms of specific "problems" that are constructed by the scholar.[3] Following this approach, disenchantment is not a "fact", or a historical process that can be generalised from "facts", but a "problem" in terms of which we can approach the intellectual production of historical actors. The problem is, moreover, not an "emic" concept encountered as such in historical sources, but a construct invented by the historian for the sake of problematising the sources.

Reconsidering the disenchantment thesis has consequences for a number of fields, which means that the scope of this work must be interdisciplinary. It aims to make a general contribution to the ambitious "history of knowledge" that has been conceptualised in recent years by Peter Burke,[4] but also to each of the three particular specialisations that the book engages with: the history of science, the history of religion,

---

[2] See especially Otto Gerhard Oexle (ed.), *Das Problem der Problemgeschichte 1880–1932*. For Weber's contribution to a problem-oriented methodology in the social and human sciences, see Weber, 'Die "Objektivität" sozialwissenschaftlicher und sozialpolitischer Erkenntnis'; cf. Oexle, 'Max Weber – Geschichte als Problemgeschichte'.

[3] Oexle, 'Max Weber – Geschichte als Problemgeschichte', 15

[4] See especially Peter Burke, *A Social History of Knowledge*; idem, '*A Social History of Knowledge* Revisited'; idem, *A Social History of Knowledge II*. The roots of such a history are found precisely among the German social analysts of the early 20th century, including Weber, Karl Mannheim, and Georg Simmel. I will also draw on more recent improvements on constructionist approaches to the production of knowledge, especially in the form of the "historical epistemology" developed in recent decades at the Max Planck Institute for the History of Science in Berlin, and the related approach of Ian Hacking. For key references, see Lorraine Daston and Peter Galison, *Objectivity*; Daston (ed.), *Biographies of Scientific Objects*; Mary Poovey, *A History of the Modern Fact*; Hacking, *Historical Ontology*.

and the history of Western esotericism. The material that the book focuses on may be conceptualised as a set of responses to the problem of disenchantment arising in an epistemological field stretched out between the contexts of scientific naturalism and Western esotericism at the end of the 19th century.[5] Scientific naturalism was a dominant epistemological current at the turn of the century, but it was also a flexible one: self-identifying "naturalists" would define the domain of "nature" in conflicting ways, thus allowing a broad space of possibilities for how to answer the problem of disenchantment. In practice this means that scientists, occultists, and religious spokespersons were able to share a flexible epistemological foundation that allowed them to speculate on questions such as the possibilities and limitations of science and the relation between science and religion in roughly comparable terms. As I will show throughout the chapters of this book, an "open-ended" understanding of scientific naturalism became the framework for establishing new natural theologies, research programmes focused on "naturalising the supernatural", and attempts by occultists to recreate their practices in line with "legitimate" science.

A Plan of the Book

The book is divided into four parts, arranged thematically in order to cover the contexts of "(mainstream) science", "parapsychology", and "esotericism". The first part, however, lays out my argument concerning the disenchantment thesis in some detail. The field of speculation that is opened up in between science and esoteric discourse is represented by the three separate parts that follow: part two concerns developments and debates about interpretations in the natural sciences; part three discusses the development of the discipline of parapsychology, understood as a genuine border area between the "esoteric" and the "scientific". The final part concerns "esoteric epistemologies". By employing an analytical focus on responses to the problem of disenchantment, patterns emerge and links are drawn between these three contexts, providing a complex picture of overlapping modern knowledge cultures.

The first two chapters spell out my argument for reconceptualising disenchantment by moving from process to problem. The first chapter revisits Weber's

[5] This field has previously been discussed in works such as Frank Miller Turner, *Between Science and Religion*; Janet Oppenheim, *The Other World*; Alex Owen, *The Place of Enchantment*.

original thesis and present my problem-oriented alternative, while the second focuses on its implications for how we conceptualise the relation between "science" and "worldviews". I also take the opportunity to discuss (and dismiss) the "re-enchantment paradigm" – a heavily politicised historical approach to questions about science and disenchantment that developed during the last decades of the Cold War, often with explicit links to "New Age science" and "counterculture" movements as well as broadly "postmodern" academic trends.[6] Together, the two chapters of part one present the major theoretical and methodological implications of my approach to the disenchantment thesis.

Part two concerns itself with the problem of disenchantment in the special sciences during the first four decades of the 20th century. Chapter three gives a short introduction to the questions at hand. Chapter four discusses the revolutionary developments in the physical sciences (physics and chemistry), particularly looking at the relation between the *interpretation* of revolutionary science, and the broader cultural context in which these have been formulated. It revisits the (in)famous "Forman thesis" on the cultural contingency of the development of quantum mechanics between the world wars, arguing in favour of a revised version.[7] Chapter five moves on to the sciences of biology and psychology, focusing on fundamental debates concerning the definition of "life", the relation between the parts and wholes of organisms, the place of the mind in nature, and questions concerning mechanism versus teleology in accounting for the evolution of species and the psychology of individual human beings. Emphasis is placed on the vitalism controversy in biology and the behaviourism controversy in psychology – both, it is suggested, related by an engagement with the problem of disenchantment. These discussions culminate in chapter six, where I turn attention to the creation of five distinct "new natural theologies", developed and expounded by academics, scientists, and other intellectuals of the early 20th century. These theologies, basing themselves variously on research into radioactivity, quantum mechanics, the fringes of psychology, ether physics, and the philosophy of biological evolution, are all examples of responses to the problem of disenchantment that do not fit the process-oriented thesis. Some of these natural-theological schools have had an

[6] The primary examples of this approach are Morris Berman, *The Reenchantment of the World*; David Ray Griffin (ed.), *The Reenchantment of Science*.

[7] E.g. Forman, 'Weimar culture, causality, and quantum theory'.

important impact on modern Western religious thought, taking it, I suggest, in directions that break with religious orthodoxy and have instead fuelled various post-war forms of deinstitutionalised, "alternative" religion/spirituality.

Part three leaves the commonly recognised and institutionalised sciences and focuses on the struggles to create a new scientific discipline around the study of "supernormal phenomena". The development from "psychical research" to "modern parapsychology" is explored in three chapters with different thematic and chronological focus. Chapter seven discusses the *epistemological* context of psychical research in light of the "agnosticism controversy" in Britain in the 1890s, and the wider discussion about the reach of scientific naturalism. I will show that psychical research, and later also the discipline of parapsychology, has based itself on an "anti-agnostic" discourse, which challenges the limitations put on the scope of science and rationality by certain spokespersons of Victorian naturalism. I suggest that the agnosticism controversy was itself a struggle with the problem of disenchantment, based as it was on a reflection on the limitations of knowledge and certainty. The psychical researchers who attacked agnosticism, however, wanted to open up scientific naturalism, and hence remain within the purview of what I term an "open-ended naturalism". Chapter eight changes focus to look at the specific research programmes that were formulated in psychical research communities during the first three decades of the 20th century. This is largely a history of failure: researchers could not agree between themselves on experimental protocols, fundamental hypotheses, or even whether or not one should seek acceptance from the scientific establishment in the first place. A number of "paradigms" for research were proposed, but none of them won general acceptance, and none of them managed to produce results that were convincing to outsiders. Thus, chapter nine sets out to explain the sudden and surprising success in professionalising parapsychology in the 1930s. I argue that the event can only be explained by reinforcing the largely "internalist" analysis provided in chapter eight with an "externalist" analysis focusing on the broader cultural, political, and social circumstances in which parapsychology was formed, networked and institutionalised in interwar America. This is another highlight of the book's argument: parapsychology, it seems, was able to create a space for itself within American academia in part by mobilising the most dominant counter-disenchantment discourses that existed in the sciences at the moment, especially the

vitalism and organicism debate in the philosophy of biology, and the opposition to the rising tide of behaviourism in American psychology.

The final part of this book delves into the obscure esoteric context of modern occultism. In chapter ten I discuss the current state of research in the still adolescent field of Western esotericism, focusing on the theorisation of "esoteric epistemologies". Esoteric discourse typically focuses on the possibilities of achieving extraordinary forms of knowledge, considered as part of a path to "salvation". In modern times, esoteric spokespersons are often found trading on the authority of the natural sciences. By presenting their knowledge practices as participating in both religious and scientific fields of discourse, modern esotericism provides an important context for discussing the problem of disenchantment. In these final three chapters I explore esoteric responses to disenchantment with the aim of demonstrating the necessity of taking up a problem-focused approach in order to grasp the complexity of modern esoteric knowledge practices. In chapter eleven I introduce the case of the Theosophical Society's rather unsuccessful struggle to harmonise an essentially static view of perennial, higher knowledge, with rapidly changing conceptual structures in the sciences. Special attention is given to the Theosophical programme of "occult chemistry", which was an attempt to clairvoyantly describe the atomic and subatomic world, and by this making a valuable *methodological* contribution to scientific chemistry. Instead of securing scientific legitimacy, however, the conflict between claims to perennial knowledge and the always uncertain and revisable knowledge produced in scientific practice only became too evident when Theosophists spoke with a self-asserted infallibility about the latter.

In the final chapter I present a comparative approach to esoteric "higher knowledge" by juxtaposing the systems of two highly influential early-20th century occultists: Rudolf Steiner and Aleister Crowley. This final comparison gives an opportunity to highlight the diversity of responses to the problem of disenchantment, and not least, the diversity of intellectual contexts that have been co-opted by esoteric spokespersons. This brings the underlying argument of the book to focus: views about the limits of reason, science, and knowledge in Western intellectual culture since the Enlightenment have been much more diverse, full of internal contrasts and conflicts, than is commonly recognised by narratives of a progressive, irreversible "disenchantment of the world". Reconceptualising disenchantment as an analytical tool

for a history of problems gives attention to the conflicting ways in which individual spokespersons have attempted to solve fundamental questions. It uncovers contested fields of knowledge where competing voices square off for authority to define what counts as "knowledge". As a result we can explore surprising links between discourses on science, religion, and esotericism, suggesting that modern Western knowledge cultures have been much more complex and pluralistic than has typically been assumed.

PART ONE

THE PROBLEM OF DISENCHANTMENT

1

The Intellectual Sacrifice

> You need to beware of the word *Entzauberung* as cautiously as you beware of the word *secularization*. Both describe processes where it is easy to have fanciful pictures of an earlier age, and as easy to have illusions of our own generation. We got rid of imps and demons but we pushed them into the subconscious and called them by different names. We got rid of witches by learning to take no notice of their spells.
>
> Owen Chadwick, *Secularization of the European Mind*, 258.

At the end of 1918, while revolution swept a Germany exhausted by war, Max Weber proclaimed to students at the University of Munich that 'the fate of our times' is the 'disenchantment of the world'.[1] This ominous prophecy certainly suited a time of deep crisis. It was also a statement that resonated with deep-seated intuitions about modern society and culture. The understanding that mystery and sacredness was disappearing from a world increasingly dominated by industry, science, and technology had its intellectual roots in German Romanticism, where it had found expression in the works of Novalis and Friederich Hölderlin.[2] After Weber reintroduced the evocative term,

[1] Weber, 'Science as a Vocation', 155. In the following I will quote from the 1947 English translation by Hans H. Gerth and C. Wright Mills (trans., eds.), *From Max Weber: Essays in Sociology*. It should be noted that this translation is, as the translators acknowledge, concerned with bringing the text into idiomatic English, and hence sentences will not always follow the German as punctually as some other translations do. To avoid as much as possible the problematic aspects of this, I include the original German text for certain passages where I deem it helpful.

[2] The idea of disenchantment had a long history before Weber. It was present not only in the works of the abovementioned Romantics, but also in works by Friedrich Schiller, and later in Karl Marx and Friedrich Engels' *Communist Manifesto* (1848). Some of Weber's contemporaries were working with similar ideas as well, notably Georg Lukács and Emil Lask. For an overview of these precursors, see Patrick G. C. Dassen, *De onttovering van de wereld*, 230-232. As Dassen explains, the pessimistic implication of Weber's cultural diagnosis concerned above all the dissolution of meaning and values. This aspect, which I call "axiological scepticism", will be discussed in more detail later in this chapter. See Dassen, *De onttovering van de wereld*,

Entzauberung, it would go on to have a deep impact on theories of modernity developed by the following generations. The notion of disenchantment exerted an important influence on the early "Frankfurter Schule" of critical sociology, for example; the phrase 'the disenchantment of the world' appeared on the very first page of Theodor Adorno and Max Horkheimer's *Dialektik der Auklärung* (1944), and was used to characterise the project of the Enlightenment as such.[3] After the Second World War the concept of disenchantment became increasingly associated with thoroughly pessimistic caricatures of modernity. Certain intellectuals associated with the rising tide of "postmodernism" would blend scholarship with activism and employ disenchantment in a polemical discourse that ultimately called for a *re-enchantment* of the world.[4]

In a more strictly academic sense, the disenchantment thesis has remained central for historians and social theorists interested in analysing the changing cultural conditions for religion and magic in the modern world.[5] The present work is concerned with such cultural conditions as well, but suggests that we should broaden the scope: it is not so much the "disappearance of magic" or changes in explicitly "religious belief structures" that are at stake in the process of disenchantment, but much more fundamental changes in the *conditions of knowledge* as such. The "disenchantment of the world" would above all imply a change in people's epistemic *attitudes*. The thesis concerns how people assume the world to work, how knowledge about that world can be attained, and what *cannot* be known. "Disenchantment" is in this sense close to a Foucauldian "episteme": it defines the basic rules by which legitimate knowledge can be produced in a certain period.[6] While disenchantment would thus have obvious implications for "religion" and "magic", it also covers a much broader area of culture.

245-274. For a discussion of Novalis, Schiller, and Hölderlin in the philosophical context of German idealism, see Frederick C. Beiser, *German Idealism*, 375-434.

[3] 'Das Programm der Aufklärung war die Entzauberung der Welt. Sie wollte die Mythen auflösen und Einbildungen durch Wissen stürzen.' ('The programme of the Enlightenment was the disenchantment of the world. It wanted to dissolve the myths and overthrow fancies through knowledge.').

[4] See especially Morris Berman, *The Reenchantment of the World*; David Ray Griffin (ed.), *The Reenchantment of Science*. This literature will be discussed at some length in chapter two.

[5] Here disenchantment has of course also influenced more triumphalist narratives of secularisation and rational progress. An example of this can be found in Keith Thomas' *Religion and the Decline of Magic*.

[6] E.g. Foucault, *The Order of Things*.

In this opening chapter we shall have a closer look at the main implications of the disenchantment thesis. What does Weber's formulation of the disenchantment of the world entail for how we study the relation between science and religion in the modern period? How does the thesis define the two activities, and on what assumptions do the definitions rest? Moreover, how can we understand these assumptions through a contextualisation of Weber's *own* work? Finally, and most importantly: how useful is the thesis itself for analysing and understanding the struggles to define the boundaries and limitations of knowledge that were being fought by Weber's contemporaries, and perhaps implicitly even by Weber himself? My main argument is that the disenchantment thesis, as it stands, is problematic, and in need of modification. Why this is, and how the concept should be modified will be shown in the following pages. The rest of this book is a testimony of what stands to be gained.

* * *

The disenchantment "thesis" was developed gradually in lectures and publications between 1913 and 1919, but it was only in the 1918 address in Munich that the phrase was used explicitly. The famous words on the disenchantment of the world fell when Weber was explaining the practical consequences of what he called an 'intellectualist rationalization, created by science and by scientifically oriented technologies'.[7] Rationalisation had a quite specific meaning in Weber's theorising, and he was particularly clear in pointing out that it does *not* refer to any straightforward "progress" in knowledge. Comparing the "savage" and the "modern" man, Weber observed that despite scientific sophistication and technological improvements, the average modern person does *not* necessarily have a better understanding of his own lifeworld than the average savage had of his. Indeed, the savage may have understood the conditions of his own existence *better* than the modern city dweller understands the complex social world he lives in. Moderns trust their cars and trams to work, but they do not necessarily know the actual mechanics of these artefacts, where they come from, who built them, and of what materials. They rely on the value of money for crucial transactions, but have really no clue about the intricacies of the economic system in which they are embedded. The point is this: while the technologies, tools and social

[7] Weber, 'Science as a Vocation', 139.

institutions that Western moderns surround themselves with exemplify a process of intellectualisation and rationalisation in Weber's terminology, they have *not* brought about any 'increased and general knowledge of the conditions under which one lives'.[8] In fact, they may even have contributed to a form of alienation. Intellectualization, Weber therefore argued, 'means something else',

> namely, the knowledge or belief that if one but wished one *could* learn [anything]at any time. Hence, it means that principally there are no mysterious incalculable forces that come into play, but rather that one can, in principle, master all things by calculation. This means that the world is disenchanted. One need no longer have recourse to magical means in order to master or implore the spirits, as did the savage, for whom such mysterious powers existed. Technical means and calculations perform the service.[9]

The difference between the savage and the modern does not rest in any specific new piece of knowledge that the latter possesses. Instead, "intellectualist rationalisation" has effected a change in our *presuppositions about* knowledge, so to speak in our epistemic attitude to the world. These presuppositions concern metaphysics as well as epistemology. Disenchantment entails above all the supposition that the world is constituted in such a way that it can, in principle, be *explained*. There are no essentially 'mysterious incalculable forces' ('geheimnisvollen unberechenbaren Mächte') at work within nature, even though there may be some as of yet unexplained mysteries. The notion that all forces in nature, whether properly understood at the present moment or not, are *ultimately explainable* is however a metaphysical assumption about the relation between the world as such and the cognitive potential of humanity.

Recent interpreters of Weber have seen the theory of rationalisation as the key to the whole of his intellectual production, connecting the domains of religion, law,

[8] Ibid.

[9] Ibid. The full German quotation reads as follows: 'Die zunehmende Intellektualisierung und Rationalisierung bedeutet also *nicht* eine zunehmende allgemeine Kenntnis der Lebensbedingungen, unter denen man steht. Sondern sie bedeutet etwas anderes: das Wissen davon oder den Glauben daran: daß man, wenn man *nur wollte*, es jederzeit erfahren *könnte*, daß es also prinzipiell keine geheimnisvollen unberechenbaren Mächte gebe, die da hineinspielen, daß man vielmehr alle Dinge – im Prinzip – durch *Berechnen beherrschen* könne. Das aber bedeutet: die Entzauberung der Welt. Nicht mehr, wie der Wilde, für den es solche Mächte gab, muß man zu magischen Mitteln greifen, um die Geister zu beherrschen oder zu erbitten. Sondern technische Mittel und Berechnung leisten das.' Weber, 'Wissenschaft als Beruf', 488.

economy, society, and politics together.[10] But what are the *sources* of intellectualist rationalisation and the disenchantment of the world? In the earliest versions of the rationalisation thesis that gave way to the notion of disenchantment, the sources of the process appear to be entirely sociological. The basic principles are laid out in an essay on interpretive sociology from 1913, where the notion of 'mysterious incalculable forces' disappearing from nature is not yet explicitly present. Instead, Weber focuses entirely on the ordering of modern society, and expectations connected to social life; he talks about the constitution of social institutions (courts of law, the military, economics) and technological devices (cars and lifts) rather than "worldviews", conceptions of nature, or even "science":

> What gives the situation of the "civilized" in this respect its specific "rational" quality in contrast to the situation of the "primitive" is, rather, (1) the generally established belief that the *conditions of civilized everyday life*, be they streetcar or lift or money or court of law or military or medicine, are *in principle rational*, that is, are *human artifacts* accessible to rational knowledge, creation, and control – a belief that has certain *significant consequences for the character of the "consensus;"* (2) the *confidence* that these *conditions function rationally*, that is, *according to known rules, and not irrationally* as do the powers the primitive seeks to influence through his sorcerer. One has the confidence that, in principle at least, one can "count" on these conditions, "calculate" their behavior, and orient one's own action toward unambiguous expectations engendered by them.[11]

The sources of rationalisation lie not in "scientific knowledge" as such, but rather in the uses of rational principles to order society, the uses of technologies, and the increasing understanding of one's surroundings in terms of humanly created artefacts. Together these factors have consequences for the "consensus", shaping a mentality that assumes everything to function predictably and "rationally".

Weber seems, however, to have been struggling with the question of what comes first – the rational ordering of society, or the expectation that the world is in principle

[10] See especially Wolfgang Schluchter, *Rationalism, Religion, and Domination*.

[11] Weber, 'Categories of Interpretive Sociology', 179. Quote from Edith Garber's translation (1981). Italics added.

rational? [12] In the 1918 lecture, where the consequences of an impending disenchantment of the world were spelt out, a primacy was given to *ideas*: the disenchantment of the world was a historical process reaching much further back than the invention of cars or lifts, beginning instead with the invention of *monotheism*. The disenchantment of nature now appears primarily connected with changes in *religious* attitudes, which may be understood as moving away from *immanentist* conceptions of god/gods towards increasingly *transcendent* conceptions of the divine. Monotheism was a first step towards separating the object of worship from the world itself ("creation"). In this perspective it was *theology* that first disenchanted the world by exorcising the divine from nature and banishing anything incalculable, unfathomable or incomprehensible to the higher worlds. When the gods had left earth, it became possible to study nature as an autonomous and entirely rational entity. "Creation" was but a complex artefact, and no capricious magic could dwell in it – hence one could study its mechanisms and successfully predict its behaviour.[13] Only when this process had reached an advanced stage could science emerge, and continue to disenchant the world by doing away with metaphysics and reconceptualising nature as an entirely self-contained, fully explicable mechanism. The disenchanted "modern condition" may have been a fruit of science and technology on the shorter run, but these were themselves the outcome of intellectual processes starting in antiquity with monotheism: 'Scientific progress is a fraction, the most important fraction, of the process of intellectualization which we have been undergoing for thousands of years'.[14]

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[12] A common criticism against Weber's theorising has indeed been that there is a lack of consistency in statements about social causation. For an overview, see e.g. Daniel Pals, *Eight Theories of Religion*, 185-187.

[13] Weber never explored this implicit thesis on the theological origins of modern science systematically. However, Robert K. Merton's thesis on the connection between Puritanism and the growth of early modern science in England was deeply inspired by Weber, constructed in analogy to Weber's famous thesis on capitalism and the protestant ethic. See Merton, 'Science, Technology and Society in Seventeenth-Century England'. For a discussion (and overview of the heavy criticism to which Merton's thesis has been subjected), see H. Floris Cohen, *The Scientific Revolution*, 177-179, 314-321. Recently, Wouter J. Hanegraaff has made a related point with regards to the orthodox variety of Protestantism as a disenchanting force, with the Enlightenment polemic (although focusing on right thinking rather than right belief) springing forth from it. See Hanegraaff, *Esotericism and the Academy*, chapter three.

[14] Weber, 'Science as a Vocation', 138.

If we assume this narrative for a minute, we might ask: what did the emerging new rationalised world look like? The idea of a fully rational universe, capable in principle of total explanation and prediction, is perhaps nowhere better illustrated than in the famous thought-experiment presented by Pierre-Simon Laplace at the beginning of the 19th century. Laplace described an omniscient intelligence in a completely rational and deterministic universe:

> at a given instant, [this intelligence] could comprehend all the forces by which nature is animated and the respective situation of the beings that make it up, if moreover it were vast enough to submit these data to analysis, [it] would encompass in the same formula the movements of the greatest bodies of the universe and those of the lightest atoms. For such an intelligence nothing would be uncertain, and the future, like the past, would be open to its eyes.[15]

Weber's disenchanted world is essentially a Laplacian world. Fathoming the whole is simply a matter of sufficient computing power. But living in a disenchanted world also entails the belief that humanity *actually possesses* the necessary mental faculties to *perform* such computations, although, of course, not in the extent of Laplace's omniscient being. Not only is the world itself knowable in principle by *some* intelligence, but it should also be knowable in practice by the systematic application of *human* intelligence. It is therefore modern "empirical science" – whose business it is to refine humanity's mental faculties, put nature to question and uncover the causes of phenomena – that becomes the foremost carrier of the disenchanted mentality in the modern world.

The disappearance of essentially mysterious and incalculable forces from nature results in what may be described as an extreme "epistemic optimism" concerning matters of fact in this world. Through "empirical science", humanity can in principle know anything worth knowing about the world. But for all this optimism about the capabilities of empiricism and reason to know matters of fact, disenchantment also imposed strict limitations on the *type* of knowledge that could be obtained. A fundamental distinction between *facts* and *values* underlie Weber's work, a distinction

[15] Pierre-Simon Laplace, *Philosophical Essay on Probabilities*, 2. Translated from the fifth French edition of 1825 (first edition 1820) by Andrew I. Dale.

that came to him through neo-Kantian philosophy, and is primarily a principle of methodology.[16] Weber was strongly influenced by his friend Heinrich Rickert (1863–1936), one of the leading neo-Kantian philosophers of his generation; references to Rickert are abundant in Weber's writings.[17] Following the fact/value distinction Weber held that, while science can produce facts about the world, there is no *meaning* inherent in those facts that can tell us how we should live our lives. Value and meaning are based not on facts, but on *worldviews* ("Weltanschauungen"), and worldviews, according to Weber, are matters of subjective *choice* and *conviction*, belonging exclusively to the private sphere.[18] No natural, scientific knowledge can be used to justify one worldview over another. In other words, an unbridgeable chasm separates "science" from a large domain of knowledge of the utmost relevance to the lives of human beings. Empirical science's utter powerlessness in the encounter with questions concerning meaning and value is the "pessimistic" flipside of the disenchantment of the world. It also sets the epistemological ground for a further differentiation between science and religion: contrary to science, religion *does* provide worldviews from which systems of value and meaning may be derived. However, the dilemma remains that there are no *objectively* rational criteria by which one may begin to evaluate such worldviews. This condition gives rise to what Weber, with a somewhat confusing metaphor borrowed from John Stuart Mill, called a "polytheism" of worldviews, made up by a large number of "gods" providing competing systems of meaning (ideologies, religions, moral communities, etc.). Potential "believers" simply had to pick their choice, without even attempting to justify the universality of their final conviction.[19]

We have now come to the question of what disenchantment implies for the relation between science and religion. Looking at the longer historical processes, there was the suggestion of a historical continuity between religion (or at least theology) and science: monotheistic assumptions concerning the relation between god and creation

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[16] Cf. Pals, *Eight Theories of Religion*, 157-159.

[17] See Patrick Dassen, *De onttovering van de wereld*, 255. The fact/value distinction is, however, usually attributed to David Hume. For a discussion and contextualisation of Rickert and the neo-Kantian and hermeneutic approaches to developing a philosophy of science specifically for the humanities, see Charles R. Bambach, *Heidegger, Dilthey, and the Crisis of Historicism*, esp. 83-126.

[18] Cf. Dassen, *De onttovering van de wereld*, 255-258.

[19] Weber, 'Wissenschaft als Beruf', 500-502. Cf. Dassen, *De onttovering van de wereld*, 259-266.

paved the way for notions of an autonomous and self-contained nature that eventually became the domain of modern organised science. Now, however, we see a different relation appear. With the disenchantment of the world completed, religion and science get strictly *differentiated*: religion concerns transcendent things, while science is bound by strict empiricism to focus on inert, mechanical nature alone. Two separate social systems eventually emerge, fulfilling different roles in society, and dominated by incompatible sets of norms for practice. While religious options still remain *possible* in a disenchanted world, the believer must be willing to make an 'intellectual sacrifice' ('Opfer des Intellekts') in order to pursue it:

> To the person who cannot bear the fate of the times [i.e. the disenchantment of the world] like a man, one must say: may he rather return silently, without the usual publicity build-up of renegades, but simply and plainly. The arms of the old churches are opened widely and compassionately for him. After all, they do not make it hard for him. One way or another he has to bring his "intellectual sacrifice" – that is inevitable.[20]

A sacrifice is necessary, because '[r]edemption from the rationalism and intellectualism of science is the fundamental presupposition of living in union with the divine'.[21] Here Weber invoked a maxim attributed to Tertullian, stating the principle of the sacrifice as '*credo non quod, sed quia absurdum est*' (translatable as 'I do not believe *in* the absurd; I believe *because* it is absurd').[22]

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[20] Weber, 'Science as a Vocation', 155. The original German reads: 'Wer dies Schicksal der Zeit nicht männlich ertragen kann, dem muß man sagen: Er kehre lieber, schweigend, ohne die übliche öffentliche Renegatenreklame, sondern schlicht und einfach, in die weit und erbarmend geöffneten Arme der alten Kirchen zurück. Sie machen es ihm ja nicht schwer. Irgendwie hat er dabei – das ist unvermeidlich – das „Opfer des Intellektes" zu bringen, so oder so.' Weber, 'Wissenschaft als Beruf', 510-511. It is intriguing to note that while the essay has become a standard reference for the phrase 'disenchantment of the world', the connected notion of an intellectual sacrifice is hardly ever cited – even despite the fact that 'Opfer des Intellekt[e]s' occurs four times in the text, whereas 'Entzauberung der Welt' is mentioned only twice (variations on the word "Entzauberung" occur only six times in total).

[21] Weber, 'Science as a Vocation', 142.

[22] Note that Weber misattributes the maxim to Augustine. See Wolfgang Schuchter, *Rationalism, Religion, and Domination*, 537 n. 21). Although Weber consistently uses the German term for the "intellectual sacrifice", there seems to be another historical link to the *Dei sacrificium intellectus* ('sacrifice of the

The disenchantment of the world has thus created a deep chasm between religion and science. Union with the divine cannot be achieved unless the scientific attitude is forsaken; while science cannot answer questions regarding meaning and value, religion can only do so by breaking with the principles of science and rationality. This 'tension between the value-spheres of "science" and the sphere of "the holy" is unbridgeable', Weber insisted, and it was ultimately this chasm that forced the '"religious virtuosi" … to undergo an "intellectual sacrifice"'.[23]

Summing up, we might say that the disenchantment of the world as spelled out in Weber's lecture entails a mild version of the "conflict thesis" of science and religion.[24] It is, however, a conflict that is escaped without bloodshed through a policy of separation, drawn on epistemological and metaphysical grounds. It is impossible for someone to legitimately stand in "both worlds" at the same time: attempts to do so would result in the loss of intellectual integrity as one failed to sacrifice one's intellect and surrender completely to the demands of faith.[25] The consequence of this condition is clear: "true intellectuals" cannot possess "true religion". Indeed, Weber observed that intellectuals often make a 'substitute' for real faith, by

> decorating a sort of domestic chapel with small sacred images from all over the world, or they produce surrogates through all sorts of psychic experiences to which they ascribe the

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intellect to God') associated with Ignatius Loyola and the Jesuits. Schuchter dates this formulation back to the first Vatican council.

[23] Weber, 'Science as a Vocation', 154.

[24] Ian Barbour distinguishes between four models of religion-science relations: conflict, independence, dialogue, and integration. We should note that in Barbour's typology, "conflict" is reserved for models that emphasise explicit hostile exchanges between religion and science, and claim that the two are cognitively incompatible and must fight to the bitter end. If this perspective is granted, the view extracted from Weber fits better in the "independence" model: religion and science may co-exist as autonomous systems, as long as they do not attempt to interfere with one another. Religion may rule in the spheres of value and meaning, whereas science is the sole authority in the domain of knowledge about the world. See Barbour, *Religion and Science*, 77-105.

[25] For a related discussion on the possibility of switching between "two worlds" and thus live one's everyday life in a disenchanted world while occasionally "escaping" in given contexts (such as ritual), see Hanegraaff, 'How Magic Survived the Disenchantment of the World'.

> dignity of mystic holiness, which they peddle in the book market. This is plain humbug or self-deception.[26]

Since "true religion" relies on absolute transcendence and is thus out of reach of science, the only way to legitimately possess it is by making an intellectual sacrifice reminiscent of a leap of faith. Those who refused to make this leap, attempting instead to back up their religious sensibilities and convictions with rational arguments or reference to natural facts, were engaging in humbug and self-deceit.

It is notable that Weber held those who were really able to make the leap of faith and sacrifice their intellects on the altars of "true" transcendent religion to be worthy of respect:

> If he can really do it, we shall not rebuke him. For such an intellectual sacrifice in favor of an unconditional religious devotion is ethically quite a different matter than the evasion of the plain duty of intellectual integrity, which sets in if one lacks courage to clarify one's own ultimate standpoint … .[27]

It was not the possession of religious belief in itself that was the problem, but the attempt to bridge the two separate domains of reason/science and faith/religion. Pure, unjustified faith remained quite all right as long as it did not claim the authority of science. Justifying religion with reference to science and rationality, however, was a form of intellectual dishonesty.

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Following the discussion above we may distinguish between three dimensions of disenchantment in the Weberian sense, specifying the process' consequences for three interconnected domains of thought (see figure 1). First of all, the disenchantment of the world implies what could be called an *epistemological optimism*: the rejection of "mysterious incalculable forces" is connected with the optimistic presupposition that all aspects of the natural world can in principle be known by "empirical science". However, two sceptical dimensions counterbalance this optimism. The second dimension can be

[26] Weber, 'Science as a Vocation', 154-155. The original German has 'Schwindel oder Selbstbetrug'. Weber, 'Wissenschaft als Beruf', 509.

[27] Weber, 'Science as a Vocation', 155.

termed *axiological scepticism* (i.e. scepticism concerning ethics, meaning and value), and revolves around Weber's insistence on the fact/value distinction.[28] This distinction sets down strict limits for scientific knowledge, while also carving out a separate domain for religion, philosophy, and ideology. Thirdly, a *metaphysical scepticism* limits the reach of scientific knowledge to the strictly empirical. We should note that it is these two sceptical dimensions, putting limitations on the reach of science, which actualises the intellectual sacrifice. The chasm between science and religion has thus less to do with the epistemically "optimistic" disappearance of incalculable forces than with the limitations imposed on rational scientific knowledge itself.

<table>
<tr><th colspan="3">The Disenchantment of the World</th></tr>
<tr><td>Epistemological optimism</td><td>Axiological scepticism</td><td>Metaphysical scepticism</td></tr>
<tr><td>Rejection of mysterious, incalculable forces</td><td>Separation of facts and values</td><td>Science can know nothing beyond the empirically given</td></tr>
<tr><td>Nature can in principle be understood by empiricism and reason</td><td>Science can know nothing of "meaning"</td><td>Metaphysics is impossible</td></tr>
<tr><td colspan="3">= Intellectual sacrifice necessary to possess religion</td></tr>
</table>

Figure 1: Three dimensions of disenchantment, and relation to the intellectual sacrifice.

Where does the strong insistence on keeping the domains of facts and values apart come from? It is evident that Weber did not derive his distinctions from a careful historical consideration of how scientists, intellectuals, and religious spokespersons have gone about their business in actual historical reality; instead, it came out of an active engagement with specific philosophical epistemological debates. His lecture on 'Science as a Vocation' was, after all, an attempt to define the specific ethos of scientific inquiry, and it must hence be seen as presenting a normative rather than strictly

[28] From the Greek *axios*, 'value'. The neologism axiology refers, in a strict sense, to the 'theory of value', and was used that way in works such as Eduard von Hartmann's *Grundriss der Axiologie* (1908). Axiological scepticism, defined here as a consequence of disenchantment, thus refers to a theory that holds it impossible to establish systems of values on empirical and scientific grounds.

descriptive or theoretical argument. Weber speaks from the perspective of a particular philosophical position, which stands in the current of neo-Kantianism: as Patrick Dassen shows, both the fact/value distinction and the insistence on separating metaphysics from science were Kantian influences mediated through Weber's friend, the philosopher Heinrich Rickert.[29] In Kantian terms "empirical science" is restricted to knowledge of "phenomena" only, leaving the metaphysical "noumenal" reality of things-in-themselves completely off bounds. Metaphysical scepticism was, however, also related to a general anti-metaphysical stream within German philosophy at the turn of the century, which gave rise to influential positions in the philosophy of science such as Ernst Mach's phenomenalism and the logical-positivist school of the Vienna circle.[30]

The point for us here is that the implications of "disenchantment", especially as set forth in 'Science as a Vocation', were derived from a very specific philosophical standpoint, presuming to set down the rules for how various knowledge practices *ought* to be conducted rather than how they are conducted in actual practice. This makes the use of disenchantment as an analytical tool for analysing knowledge practices from a historical point of view problematic: standards for "good" and "bad" practice are already assumed, and the line between analysis and normative judgment becomes blurred. Indeed, it is only by holding observed practice up against a normative standard derived ultimately from Kantian philosophy that Weber is able to dismiss a certain type of activity as "charlatanry", while respecting another as a "legitimate" choice. By doing so, however, the scholar has entered the philosophical and even theological discourse of what constitutes "genuine" religion and science, while leaving behind the strictly historical and sociological question of how actors actually do behave. The disenchantment thesis has thus become an instrument for defining insiders and outsiders of the categories discussed (i.e. science versus pseudoscience, religion versus superstition). It has relinquished its distanced analyticity for an active voice in the discursive battles it set out to explain.

This normative leap is clearly problematic for the purpose of historical analysis. When Weber considered "empirical science" as the engine of disenchantment, it was an ideal science conceived through a Kantian epistemological lens that he had in mind.

[29] Dassen, *De onttovering van de wereld*, 255. Cf. Bambach, *Heidegger, Dilthey, and the Crisis of Historicism*, esp. 83-126.

[30] Cf. Dassen, *De onttovering van de wereld*, 297-299.

Whether this ideal science corresponds with actual scientific practice is a different matter altogether; the ideal of a specific philosophy has little to tell us about the attitudes and endeavours of real scientists and intellectuals. The same goes for religion: the predominantly Protestant presupposition that religion is about doctrines of faith concerning transcendent realities that cannot be substantiated through reason or empiricism tells us little about actual religious meaning-making, or the legitimisation of beliefs and worldviews invested with religious significance. The normative constrain of the disenchantment thesis will inevitably create a blind spot covering all intellectual, religious, or scientific developments that are at odds with the epistemological premises on which the thesis has been erected. Such positions must either be dismissed as "not *really* religious/scientific", or be written out of the narrative of the disenchantment process altogether.[31]

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It is not without irony that the disenchantment of the world was proclaimed at the dawn of the Weimar republic, by one of the drafters of the republic's constitution. Quite contrary to the dictums of the disenchantment thesis, the Weimar era saw a large number of Germany's intelligentsia refusing to undergo the intellectual sacrifice. The very foundations of disenchantment were coming under attack, and not from obscure and marginal occultists, but from the presumed engine of disenchantment itself: academics and spokespersons of the 'empirical sciences'. The 1920s were a decade of radical developments across the fields of the natural sciences, occurring in parallel with broad cultural changes that greatly impacted peoples' mentalities: new political ideologies were on the rise, and heterodox religious practices flourished. These cultural trends affected the entire Western world; when it comes to scientific developments, Germany contributed more than most countries. Before the decade was over, leading German physicists were claiming with great confidence that they had expelled causality and determinism from the workings of nature. If this were true it would mean the death

[31] Compare this view with Hanegraaff's recent observation that disenchantment was the post-Enlightenment mode of a process of religious and philosophical exclusion that had older theological roots. I argue that this process of rejection is still implicitly at work in Weber's own conceptualisation of disenchantment. Cf. Hanegraaff, *Esotericism and the Academy*, 371-372. I will return to these discussions in chapter ten.

of "epistemological optimism" in the disenchanted variety, and the reintroduction of incalculable forces – making even Laplace's omniscient intelligence incapable of predicting the future course of events.[32] While physicists battled with causality, biologists and psychologists launched a campaign for holism, organicism, and even explicit vitalism, aiming to counter mechanistic and reductionist thinking and replace it with alternative models.[33] The time was ripe for scientific theories that went against the grain of the classical mechanism that had inspired Enlightenment natural philosophers such as Laplace, and informed the assumptions of generations of scientists, including that of Weber himself.

Weber was, however, far from ignorant of the fact that something was stirring the intellectual waters of Germany. In his address to the students of Munich in 1918, he spent much time denouncing the increasingly popular *Lebensphilosophie* expounded by the youth movements, criticising their emphasis on 'sensation', 'experience', and 'personality' as a faddish, shallow and quite possibly "self-deceptive" breach of intellectual integrity.[34] The widespread attitudes of "holism" and "spontaneity" as opposed to "mechanism" and "causality" were not reconcilable with the scientific vocation. What Weber failed to recognise, however, was that his colleagues in the natural sciences themselves were far more ambiguous in their attitude to the rigorous mechanistic framework presupposed by disenchantment: indeed, the generation that embraced *Lebensphilosophie* would also be responsible for revolutionising the natural sciences. Meanwhile, interest in some of the 'psychical experiences' that Weber had dismissed as swindle and self-deception was gaining momentum at the border areas of the scientific field.[35]At the time of the lecture in 1918, Munich had established itself as

[32] See e.g. Paul Forman, 'Weimar Culture, Causality, and Quantum Theory, 1918-1927'.

[33] See Anne Harrington, *Re-Enchanted Science*; Mitchell G. Ash, *Gestalt Psychology in German Culture*; Heather Wolffram, 'Supernormal Biology'. For developments in other countries, see e.g. Frederick Burwick and Paul Douglass (eds.), *The Crisis in Modernism*; Robert C. Grogin, *The Bergsonian Controversy in France*; G. E. Allen, 'Mechanism, vitalism and organicism in late nineteenth and early twentieth-century biology'; Peter J. Bowler, *The Eclipse of Darwinism*.

[34] Weber, 'Wissenschaft als Beruf', 485.

[35] Note, however, that the passage translated as 'all sorts of psychic experiences' is a translation of 'allerhand Arten des Erlebens', which is obviously a much broader phrase lacking the explicit connotations of "psychical research". Nevertheless, following the overall logic of Weber's argument, it

one of the world's foremost centres of research into the elusive "occult" phenomena associated with spiritualist mediums. A laboratory for psychical research was established in Munich before the war by Baron Alfred von Schrenck-Notzing, popularly known as "der Geisterbaron", hosting hundreds of experiments with spirit mediums aimed at demonstrating their alleged "telekinetic" and "ectoplasmic" phenomena.[36] The experiments were duly documented in several books, as well as in the pages of journals such as *Psychische Studien* and *Zeitschrift für Parapsychologie*.[37]

The prospective discipline which Schrenck-Notzing was working within –known at the time as "psychical research" in English, *psychische Forschung*/*Parapsychologie* in German, and *métapsychique* in French – had first emerged in late 19th century England, but experienced a decline at the dawn of the 20th. After the First World War it saw a revival all over Europe, but most significantly in the United States where, in the early 1930s, it gave birth to a professionalised, university discipline under the banner of "parapsychology".[38] More than simply a "pseudoscientific" outgrowth of spiritualism, the psychical research communities of the early 20th century connected networks of academics – biologists, psychologists, philosophers, physicists – who saw in it a promising scientific frontier. By the 1920s psychical research was portrayed by its proponents to offer a field of empirical data that linked up to important scientific questions in other disciplines, as well as giving pointers to questions of philosophical, metaphysical and religious significance.

In the shadow of the disenchantment thesis all of the above must be relegated to an illegitimate cultural margin somewhere "in between" science and religion. They are not truly science: some because they accept incalculable forces, others because they claim scientific knowledge in domains where it does not apply. They do not belong to religion either, since they do not confine themselves to transcendental realities or

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seems safe to assume that "psychical experiences" would make up a significant subset of the experiences he had in mind. Citation in Weber, 'Wissenschaft als Beruf', 509.

[36] Wolffram, *The Stepchildren of Science*, 131-189. See my discussion of this and related research programmes in chapter eight.

[37] Albert von Schrenck-Notzing, *Materialisations-Phänomene*; idem, *Physikalische Phänomene des Mediumismus*; idem, *Die Physikalischen Phänomene der Grossen Medien*. Cf. Wolffram, *The Stepchildren of Science*, 133-134; Eberhard Bauer, 'Periods of Historical Development of Parapsychology in Germany'.

[38] The history of psychical research and parapsychology will concern us at length in part three. Further discussion and references can be found in those chapters.

speculative exercises concerning values and ethics. What, then, is this illegitimate and contested borderland really about? *Entzauberung* literally means the disappearance of "magic" or "sorcery" (*Zauber*),[39] and we should not be surprised to find that the sphere of the illegitimate bears a resemblance to that elusive old category of "magic". The category of magic is, of course, tainted with polemical associations with a long and complex history in Western culture.[40] Together with terms that have often (and confusedly) been connected with it, such as "superstition" and "the occult", this category has primarily served the function to delegitimise undesired or foreign forms of religion, and, increasingly since the Enlightenment, undesired forms of natural philosophy and science as well (i.e. magic as "pseudoscience"). In his recent work, Wouter J. Hanegraaff has interpreted the emergence of these three 'tainted terminologies' as a continuous struggle to overcome *paganism*.[41] A fear of idolatry and demonic worship had been the traditional context of anti-magical polemics in the history of Christianity since late antiquity; however, Hanegraaff argues that the concepts of superstition, magic, and the occult were all reinvented and renewed during the Enlightenment. At a time when the basis for intellectual legitimacy was gradually shifting from the study of traditional (and scriptural) "authorities" to the careful study of nature, the concepts that had originally been used to delegitimise wrong conceptions of the divine were increasingly refashioned to attack wrong conceptions of nature and of humanity's capacity for

[39] A *caveat* should be expressed at this point, since a distinction was beginning to be made between *Magie* and *Zauber* in German *Religionswissenchaft* in the early 1900s; 'magic' would thus refer specifically to 'occult' arts and techniques of controlling capricious forces – which made it 'more scientific' and also more friendly to 'community building', as an entry on 'Magier, Magie' in the widely cited *Realencyklopädie für protestantische Theologie und Kirche* stated it in 1900. Taken as a whole, Weber's late work, to which the thesis of *Entzauberung* belongs, displays some ambiguity when it comes to the actual relation between *Magie* and *Zauber* ("magic" and "enchantment"), but overall it seems clear that the process of transformation that he referred to as the disenchantment of the world did indeed include the disappearance of magical means of controlling the world and achieving salvation, to the benefit of transcendentally oriented religious worship. For a discussion, see Breuer, 'Magie, Zauber, Entzauberung', esp. 119-120.

[40] See e.g. Randall Styers, *Making Magic*; Marco Pasi, 'Magic'; Hanegraaff, *Esotericism and the Academy*, 164-177.

[41] Hanegraaff, *Esotericism and the Academy*, 153-191.

knowledge of it.[42] By reinventing the concepts in this way, "magic" and its related terms became marginal and problematic intermediates somewhere "between" science and religion. The very same structure is at work in the concept of disenchantment: while the "pure types" of science and religion both have legitimate places in "disenchanted" society as long as they stick to their respective rules and limitations, the *tertium quid* of "magic" can have no such position. Disenchantment, then, holds within it a normative thrust that continues the delegitimisation and rejection of the "magical margin".[43]

Contrary to a thesis of progressive disenchantment, this presumed margin of intellectual, cultural and religious life seems only to have grown in significance during the interwar period, both in Germany and in the rest of the Western world. New forums for negotiation between science and religion were established, and new voices for reconciliation emerged. Historian of science Peter Bowler even argues that the 20th century begun 'on an optimistic note for those who wished to portray science as a force that could be used to modernize religion rather than replace it'.[44] In fact, the underlying notion that science and religion are two irreconcilable and autonomous domains with no legitimate overlapping spheres or points of contact was never universally accepted, neither by scientists nor by religious spokespersons. When the psychologist James H. Leuba conducted the first comprehensive study of beliefs about God and immortality in the American population in 1916, for example, he found that 41.8 % of American scientists subscribed to a strictly *theistic* belief in a personal God who answers prayers in a way that is 'more than the subjective, psychological effect of prayer'.[45] This

[42] Hanegraaff furthermore sees these processes of polemical "othering" as an important phase in the emergence of "esotericism" as a category connecting various historical currents which share the status of being in conflict with mainstream religion and science. See my discussion in chapter ten.

[43] In a specific sociological sense, "marginal people" inhabit more than one "social world" and are thus forced to manage a set of diverging and conflicting identities. This has obvious applications to the strict call for division between scientific and religious activities implicit in the intellectual sacrifice. For the classic works on marginality in this sense, see Robert E. Park, 'Human Migration and the Marginal Man'; Everett V. Stonequist, *The Marginal Man*. Cf. discussion in Susan Leigh Star and James R. Griesemer, 'Institutional Ecology, 'Translations' and Boundary Objects', 411.

[44] Bowler, *Reconciling Science and Religion*, 31.

[45] J. H. Leuba, *Belief in God and Immortality*, 250. Leuba's findings are remarkably consistent with later studies of the religious beliefs of American scientists, right up to the present day. See, e.g., Rodney Stark, Roger Finke, and Laurence Iannaccone, 'Religion, Science, and Rationality'; Pew Research Center, 'Scientists and Belief'. Recently, a massive study was conducted in the US involving both quantitative and

theological position is hardly compatible with a disenchanted view of autonomous and predictable nature. While theologians will no doubt insist that prayer and magic are two very different things, the consequences for the uniformity of nature remain precisely the same – "divine interventions" are just as abhorrent to disenchanted science as any act of "magic". A belief in the effectiveness of prayer is for all practical purposes equivalent to the belief in incalculable powers.

In further defiance with the dictums of disenchantment, positive appeals to the authority of science have been a central legitimising strategy for religious movements, and remain so in contemporary times.[46] This is especially true for those *esoteric* discourses that blossomed outside of the established and well-guarded theologies of the "old churches". Currents such as spiritualism and occultism would typically seek to establish legitimacy by claiming compatibility with scientific breakthroughs, and sometimes even by appealing to what they considered to be scientific methodology and use of evidence.[47] The important point for us here is that, despite the disenfranchisement of these myriad positions from the scene of "legitimate" religion or science, *claims to* scientific legitimacy seems to have been gaining rather than losing momentum in the early 20th century.

An increasing rejection of the strict disenchantment of the world *within* the sciences appears to have been a significant reason for this momentum. On the British Isles the developments in physics, biology, and philosophy gave new fuel to the ongoing project of reviving "natural theology": theology based on reason and empirical observation rather than on revelation and faith.[48] In one of his oft quoted overstatements, the British astrophysicist and cosmologist Arthur Eddington exclaimed that 'religion first became possible for a reasonable scientific man about the year 1927',

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qualitative research into the actual beliefs of scientists working in the country's top twelve universities. 1,700 scientists were polled, while interviews were conducted with 275 of these informants. The results, which confirmed the pattern of earlier studies, are published in Elaine Howard Ecklund, *Science vs. Religion*.

[46] The varieties of such appeals were recently documented in a massive 924 page anthology: Olav Hammer and James R. Lewis (eds.), *Handbook of Religion and the Authority of Science*.

[47] See Olav Hammer, *Claiming Knowledge*. See also John Warne Monroe, *Laboratories of Faith*; Wouter J. Hanegraaff, 'How Magic Survived the Disenchantment of the World'; Asprem, 'Magic Naturalized?'; idem, 'Theosophical Attitudes Towards Science'.

[48] See e.g. Larry Witham, *The Measure of God*; Bowler, *Reconciling Science and Religion*.

referring to Werner Heisenberg's introduction of the uncertainty principle of quantum mechanics in that year.[49] In his broad survey of Americans' beliefs in personal immortality, the aforementioned James Leuba found it necessary to spend an entire chapter on 'modern immortality' as presented through the alleged scientific demonstrations of psychical research. Apparently not sharing Weber's Kantian notion about the scope of science, the academic psychologist even noted that 'it would have been strange indeed if in this present scientific age systematic efforts had *not* been made to lift the modern belief above the parlous state in which it was left by metaphysics'.[50] This statement echoes the explicit rationale given by some of the pioneers of psychical research and parapsychology: in a later chapter, I shall argue that they were engaged in a naturalisation of the supernatural that simply had to transgress the boundaries of knowledge as drawn by Kantian epistemology.[51]

This cursory overview illustrates that something is not quite right with the disenchantment thesis. As Owen Chadwick warned in the passage quoted from at the beginning of this chapter, the concept of *Entzauberung* is liable to some of the same problems as that of "secularisation": not only is it easy to misrepresent earlier epochs as being more magical, religious, or "primitive" (whether in a positive or a negative sense), but it is also easy to develop blind spots for one's own culture.[52] In the case of secularisation theories, the simplifications of the past and blind spots for the present have often proved to be remarkably well attuned to contemporary ideological struggles over the very identity of the theorist's own society.[53] As James Beckford has noted,

> It is highly significant … that the first programmatic attempts to identify secularisation, in the sense of the declining significance of religion, as a key feature of societal development in the mid-nineteenth century, occurred in the context of ambitious efforts to characterise the novelty of industrial, capitalist or modern societies.[54]

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[49] Eddington, *The Nature of the Physical World*, 350. For the exact meaning and context of this phrase, see my discussion in chapter seven.

[50] Leuba, *Belief in God and Immortality*, 154-172, 154. Emphasis added.

[51] See especially the opening statement in Frederic Myers, *Human Personality*, 1. Cf. my discussion of the anti-agnostic (and implicitly anti-Kantian) discourse of psychical research in chapter seven.

[52] Chadwick, *The Secularization of the European Mind*, 258.

[53] See e.g. James A. Beckford, *Social Theory and Religion*, 33-43.

[54] Ibid., 35.

In early secularisation theories such as that of Marx, for example, the line between a scientific prediction of religious decline, and an ideological utopia of no religion becomes entirely blurred. Weber's thesis on the disenchantment of the world as the fate of his times may have been born from similar circumstances. But where the mid-19th century secularisation theories had generally been fuelled by optimism for the project of modernity, Weber was writing at a place and time where cultural criticism and intellectual revolts against modernity were gaining ground. It is no coincidence that Oswald Spengler's *Untergang des Abendlandes* had been published only a few months before Weber's Munich address, or that Weber had to explicitly attack *Lebensphilosophie* and its "cult of experience". The disenchantment thesis, as articulated in the context of Weber's lecture to future scientists and researchers, takes an active position in fundamental philosophical debates of his time concerning the identity and future course of the academy.

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The agenda of the present study is to reconceptualise the disenchantment thesis on lines that are more suitable to analytical concerns, and thereby to draw some of the material that has been hidden in the blind spots of the old thesis into the light. This material sometimes belongs to mainstream science, sometimes to fringe science, other times to esoteric discourses. In all these fields, we find people who have committed one of the two "errors" that lead one into the damned "magical margin" of the disenchanted world. On the one hand stand those who, in various ways and for various reasons and purposes, contested the disenchantment of the world as such, by holding that mysterious and incalculable forces are still at play in the world. Their error was to dispute disenchantment's *epistemic optimism*, as the presence of irreducible mystery means that there is a limit to calculations and instrumental control of phenomena. On the other hand stand those who in principle *accepted* that the world was disenchanted, but *rejected* to undergo the intellectual sacrifice. The error of these men and women was to *overemphasise* epistemic optimism, and to extend reason far beyond the limits imposed on it by Kantian philosophy. Metaphysics, ethics, theology – all could be grasped and comprehended completely by the mind of the ultra-rationalists. Anything – whether the weight of a spirit, the shape of a thought, or the topography of the realm of

the dead – could be measured, manipulated, and controlled by the ultra-empiricist. Heretics of both types are found in the psychical research laboratory and in occult lodges, but also in mainstream academic institutions.

Far from all of these post-Enlightenment heretics wanted to marry science to religion, however. It is perfectly possible to advocate incalculable forces, hold that ethics can have a basis in natural fact, or even to consider metaphysics to be derivable from scientific knowledge without attributing any explicitly "religious" significance to these views. Most of the dominant ideologies of science at the turn of the century in fact rejected Weber's axiological scepticism: British scientific naturalism, August Comte's positivist movement, and the emerging secular humanist movement all went in the direction of claiming that values, meaning and ethics *can* be found inherent in nature, or be derived from it, whether the solution was found in utilitarian philosophies in the style of John Stuart Mill, in Comte's "Religion of Humanity", or in the evolutionary ethics of Thomas Henry Huxley or Herbert Spencer.[55] Pens and voices that would define entire generations of intellectuals were in this sense "heretics" who refused to sacrifice their intellect in the search for the sources and qualities of the ultimate "good".

Huxley, Spencer, Mill, and Comte may have been controversial figures, certainly from the perspective of organised religion, but it would clearly be absurd to label them scientific heretics. The same can be said for a wide range of academics and scientists of the early 20th century who were equally at odds with one or more dimensions of disenchantment: as the following chapters will demonstrate, a complete list of people who were at odds with the disenchanted dictums would have to include some of the greatest physicists, biologists, philosophers, and psychologists of the 20th century. Can we avoid the absurdity of dismissing all these as self-deceived charlatans without overthrowing Weber's insights concerning rationalisation and intellectualisation in the process?

I propose to redefine disenchantment in ways that make it more suited to deal with the complexity of Western intellectual and cultural life. The main thesis is that we can avoid the problems and blind spots identified in this chapter if we define disenchantment as a culture-specific intellectual *problem* rather than a socio-historical *process*. This move from process to problem entails, above all, that we must focus on the

[55] For an overview of the various ideologies of science in Europe during the 19th century, see Richard G. Olson, *Science and Scientism in Nineteenth-Century Europe*.

plurality of responses to certain presuppositions about knowledge that have become widespread as a result of historical and social developments (i.e. Weber's social and cultural "rationalisation"). We do not, however, *reify* those presuppositions by holding that every expression must conform to it or else be by definition "illegitimate". Furthermore, we do not assume that developments are irreversible, or that cultural states are stable. To the contrary, the problem-focused view of disenchantment emphasises that solutions and responses are up for negotiation, and even that the problem itself may in principle be discarded as a pseudo-problem that only arises in certain philosophical and theological systems. All these responses are possible, and all of them can be viewed in their relation to an analytical construct, "the problem of disenchantment".

What, then, characterises the problem of disenchantment? What are the questions that call for answers and solutions? Starting off from Weber's original formulations, the problem of disenchantment becomes a set of clearly stated questions related to the three dimensions that we have identified earlier in this chapter: are there incalculable forces in nature, or are there not? How far extended are the boundaries of our capabilities for acquiring knowledge? Is there, or can there be, any basis for morality, value, and meaning in nature? Can religious worldviews be extrapolated from scientific facts? If no, why? If yes, how? In short: the problem of disenchantment contains all the features of Weber's disenchanted world, with question marks added. As an analytical tool it focuses on the multiplicity of ways in which historical actors have answered these fundamental questions about knowledge, nature, meaning, and metaphysics. It acknowledges that these questions do arise as genuine intellectual problems, but it sees no reason to assume that the problem must necessarily be solved in a particular way. The "intellectual sacrifice", for example, becomes less of a demand than a specific and situated philosophical and theological response to the problem of disenchantment itself. It may have been the "theologically correct" response in certain protestant circles, but it can hardly be generalised as the only legitimate way to be religious – or to have values – in the modern Western world.

Moving from a process- to a problem-focused understanding of disenchantment has important methodological implications that should be made explicit. It means that we give primacy to individual agency over socio-cultural structure. Conceptualisations of disenchantment as a (socio-historical) *process* that affect modern societies, leading to

a number of consequences for the individuals that make them up, imply rather abstract, top-down explanations of individual beliefs and actions: in these accounts, it is not so much individuals that define their reality, build societies, make choices, create and negotiate culture and meaning, as it is the overarching "systems", "structures", "worldviews" or "ideologies" that determine what individuals do and say. By contrast, the problem-focused view I am proposing avoids such abstractions of agency, focusing instead on the discursive activity of individual actors, emphasising the multiple and conflicting interests that are played out among individuals, institutions, and organisations. In fact, I hold that this approach makes the concept of disenchantment more consistent with Weber's overall "interpretive sociology". It implies, to begin with, a methodology for historical research along the lines of a "history of problems" (*Problemgeschichte*).[56] Disenchantment is not a discrete process that can be generalised from historical data and straightforwardly described as an historical object. Instead, it is an analytically constructed problem that makes it possible to interrogate sources in a systematic fashion that may uncover conceptual relations that have remained hidden from view.

The problem-focused approach also implies another methodological principle that Weber was an important early contributor to: methodological individualism.[57] Jon Elster has defined this principle most succinctly as 'the doctrine that all social phenomena (their structure and their change) are in principle explicable only in terms of individuals – their properties, goals, and beliefs'.[58] If we follow this principle, the driving force behind processes such as "functional differentiation", "secularisation"

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[56] See especially Otto Gerhard Oexle, 'Max Weber – Geschichte als Problemgeschichte'.

[57] See Weber, *Wirtschaft und Gesellschaft*, 1-30. The term "methodische Individualismus" was first coined by Weber's student, Joseph Schumpeter in 1908, and was introduced by him into English in 1909. See Schumpeter, 'On the Concept of Social Value'. The methodologically individualist approach to the question of agency in social theory has since generated a large literature. Some of the main works include Karl Popper, 'The Poverty of Historicism' (three parts; 1944–1945); Talcott Parsons and Edward Shils, *Toward a General Theory of Action* (1951); Friedrich von Hayek, *The Counter-Revolution of Science* (1955); Jon Elster, 'The Case for Methodological Individualism' (1982); Jürgen Habermas, *The Theory of Communicative Action*, two volumes (1984). Through the 1990s and until today we should also mention the significant attempts to bridge individualism and structuralism through so-called actor-network theory. For an overview, see Bruno Latour, *Reassembling the Social*.

[58] Elster, 'The Case for Methodological Individualism', 453.

(understood here as the separation of "religious" and "secular" spheres),[59] "rationalisation" and "disenchantment", must be sought on the level of individuals. They result from the actions of individuals and groups, in response to specific problems that are also formulated by individuals. Arguments are devised and uttered in the press, politicians pass laws, institutions are founded and governed by social actors, capital is raised and invested in projects that individuals believe in, whether for profit motives or other reasons. Individual agendas and motivations are ubiquitous, and it is the methodological individualist's imperative to always relate higher-order "processes" to such lower-order concerns.[60]

Let me briefly illustrate this with an example that is important to our present concerns: the "secularisation of science", or more precisely, the process by which the natural sciences were differentiated from religious institutions. This process took place during the 19th century, and was inseparable from the professionalization of natural science. The study of nature had previously been the province of the "natural philosopher", who had typically sought a broad understanding of the world in which theology, metaphysics, moral- and political philosophy were integral parts. The

[59] A complete discussion of secularisation theories would take us too far away from the focus of the present work. It will suffice to say that when I refer to "secularisation", I imply the "differentiation thesis" advocated by such theorists as José Casanova and Karel Dobbelaere. (E.g. Casanova, *Public Religions in the Modern World*, 19-20; Dobbelaere, 'Assessing Secularisation Theory'). This version of the secularisation theory, much more modest than the straw-man typically attacked by secularisation denialists, focuses on processes of differentiation of "religious" and "secular" spheres on the macro level of society, and consider any specific effects on lower levels (e.g. concerning church attendance or professed belief) to be hypotheses that can be tested empirically. For example, no necessary connection is assumed between increased differentiation (e.g. "secularisation") and a general *decline* in religious observance in a given population – hence, the commonly found rhetoric that the continued presence of individual belief and religious practice counters "the secularisation theory", is way too simplistic and misses the point. See e.g. Rodney Stark, 'Secularization, R.I.P.'; cf. Steve Bruce *God is Dead*, 1-44.

[60] It will be noted that Weber, in congruence with his interpretive sociology, focused not only on individuals, but specifically on the individuals' *intentional states*. This step is problematic, and will not be adopted here. Instead, I seek to limit the analysis to what is more readily observable, namely the discursive practices of individual agents, while refraining from grounding analysis in assumptions about internal states of minds. See especially Habermas, *The Theory of Communicative Action*, 102-142. Cf. Kocku von Stuckrad, 'Discursive Study of Religion: From States of the Mind to Communication and Action; idem, 'Discursive Study of Religion: Approaches, Definitions, Implications'.

discipline was to change rapidly after 1800, as the spheres of the natural and human sciences came to be separated, compartmentalised, and embedded in different institutions. In 1834 William Whewell coined the term "scientist" to denote a new, emerging class of knowledge experts, specialising in the study of nature alone. Through the rest of the century, natural scientists fought a prolonged campaign, involving public polemicising, political lobbying and fundraising, aimed at heightening the status of their profession, and to free it from certain legal constrains that continued to keep scientific training under theological review in many traditional universities.[61] The point is that the separation of "scientific" knowledge from "religious" knowledge is governed not by abstract "structures" or processes driven by an abstract logic of its own; at every step of the way it is the result of specific social struggles, political decisions, and the individual pursuit of career opportunities, social status, and the satisfaction of personal interests.

Accepting methodological individualism it follows that no sociological process is truly irreversible, or even total. While certain social struggles and political decisions in the 19th century led to an institutional separation of religion and science, the early 20th century saw an increasing number of significant institutions established with the intention to *reverse* this process of differentiation and resume discussions of religious and scientific knowledge under the same roof once again.

This brings us to the core of the present study as a whole: we shall meet individuals who have walked the outer boundaries of reason, people who have contested the limits on knowledge imposed by disenchantment, and people who have sought to reverse the differentiation of religion from science that emerged after the Enlightenment. Such counter-movements may seem problematic if the process view of disenchantment is taken for granted. Once we abandon the notion of abstract structural processes, and focus on the agency of individuals instead, conflicts, contests, negotiations and disagreements about even the most fundamental questions become precisely what we expect to see. As the chapters of this book will show, such conflicts and disagreements cannot entirely be reduced to the struggle between specific groups either: the problem of disenchantment is not a question of being for or against "the academy", for example, or even for or against "scientism". The problem of disenchantment, as I shall seek to demonstrate in future chapters of this book, has not

[61] For a concise version of this argument, see Frank Miller Turner, 'The Victorian Conflict between Science and Religion: A Professional Dimension'.

primarily manifested as a battle over the influence of the academy in wider society; it has just as much been a debate among individual scholars and scientists about the identity and future of the academy itself.

2

Science as Worldview

> No, Thérèse, no, there is no God, Nature sufficeth unto herself; in no wise hath she need of an author; once supposed, that author is naught but a decayed version of herself, is merely what we describe in school by the phrase, a begging of the question.
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> Marquis de Sade, *Justine, or Good Conduct Well Chastised*, 496.

INTRODUCTION

The problem of disenchantment concerns above all the relation between science and worldviews. As seen in chapter one, Weber's starting point had been that scientific knowledge about the world could never tell anyone how to live or what to value. In a disenchanted world science had complete authority as far as knowledge about nature was concerned, but nature did not conceal any secrets of an ethical or religious character that could be revealed and understood through discovery. Science and worldview were therefore entirely separated domains. Such an absolute breach between science and its worldview implications has, however, often been ignored in practice. Speculations about the worldview implications of science have generated a voluminous literature, with contributions from both contenders and contesters of science. By reconceptualising disenchantment as a problem rather than a process we can include all these voices and analyse how they take part in broader struggles to make sense of life in the modern world.

The revisionism implicit in this move does not come without its challenges, however, and the present chapter is designed to sort out the most difficult ones. Above all, we get into a perilous terrain between philosophy of science and historical research: what are the implications of dismissing Weber's disenchantment thesis as (epistemologically) normative, and reducing his position to one among a number of competing claims about the reach of science and its relation to the domain of religion, meaning, and metaphysics? Do we automatically have to side with a presumably

"oppressed" intellectual current of "re-enchantment", against a presumably oppressive disenchanted establishment? Or does the alternative of stressing dialogue, negotiation, and struggle between situated individuals on all sides force us into a position of complete epistemological relativism that ultimately backfires on the very attempt to write an academic commentary that must presume to judge some historical narratives right and others wrong? In short: can we proceed without being devoured either by the Scylla of an activist emancipationism (advocating "suppressed knowledge") or the Charybdis of a self-defeating relativism? I shall argue that we can avoid both, but that we must take the problems seriously.

In the first part of this chapter, I will discuss some central works of what might be called the "re-enchantment paradigm" in the history of science.[1] My intention should be crystal clear from the outset: one ought to be suspicious whenever references to a "re-enchantment" of science are made. I will argue that the re-enchantment paradigm is troubled by analytical poverty, driven by heavy ideological bias, and is demonstrably untenable from a historical point of view. If matters were somewhat simplified by Weber's original thesis, they have become entirely muddled in the writings of a generation of post-war academic activists fighting what they have understood as systemic evils of modernity in which "science" played a major, yet nebulous, role. I hold that the perspectives of key authors belonging to this broader landscape of postmodern science criticism are in fact to be seen as part of the very emic discourses that form the subject matter of the present study: they are late responses to the "problem of disenchantment", following in the footsteps of some of the voices of the early 20th-century that we will be discussing in later chapters of this book.

Having identified the weaknesses of the re-enchantment paradigm, I will turn to a more constructive path. In the last parts of this chapter, attention is turned to another term that has been tied to the notion of "scientific worldviews": that of *scientific naturalism*. I will provide a brief historical and philosophical introduction to scientific naturalism, which together will serve two related purposes. From a historical perspective, I argue that scientific naturalism constituted a potent intellectual movement at the turn of the century that, although it may later have given rise to certain stereotypes about science that have inspired the polemical uses of

[1] E.g. Morris Berman, *The Reenchantment of the World*; David Ray Griffin (ed.), *The Reenchantment of Science*.

"disenchantment", was actually at odds with some of the main dimensions of Weberian disenchantment. By comparing the philosophical attitudes of naturalism to the dimensions of disenchantment, we see that naturalism has always carried in it a potential for challenging the would-be disenchantment of the world. Notably, scientific naturalism refused to accept the intellectual sacrifice, seeking on the contrary to ground worldviews in science and natural knowledge. From a historical perspective, then, scientific naturalism shows us that leading intellectuals at the dawn of the 20th century solved the problem of disenchantment in rather different ways than what Weber would have deemed to be legitimate. In this sense, naturalism provides an essential intellectual context for broader philosophical concerns about science. It provided an alternative to the neo-Kantian perspective on which the disenchantment thesis was built. This point sets the stage for my overall argument throughout this book: contradictory responses to the problem of disenchantment reflect competing visions of the nature of the scientific enterprise itself.

I shall, however, take my focus on naturalism one step further. I will refer to naturalism not only to broaden the philosophical context of early 20th century science, but will also use it to inform my own methodological position in order to avoid the epistemological quagmire of relativism. I shall argue that a form of *methodological naturalism* offers the best framework for appreciating the variety of historical responses to the problem of disenchantment without succumbing to partisanism or relativism. As we shall see, naturalism is strongly *a posterioristic*: all knowledge is in principle open for revision – including the very epistemological and methodological principles by which knowledge itself is produced and justified. This means that naturalism is an underestimated ally of social constructionism: naturalism is entirely compatible with reconstructing the ways people have thought about the world in any given period, based on the canons of reason and evidence then in currency, without thereby jumping to the conclusion that "anything goes". Even if standards of rationality are liable to change from one historical context to another, and even if the actual, practical relevance of such standards is always dependent on social, cultural, and individual factors, epistemological standards and assumptions are still there as important parts of knowledge-building in any given context. It remains the case that certain knowledge claims will always be easier to make in given contexts than others, and that certain styles of argumentation will seem more persuasive than others. From a

naturalistic perspective, furthermore, such ever-changing codes of rationality are ultimately constrained by pre-discursive reality – including by the mental and cognitive capacities of human beings and by the natural environments in which they live.

These concerns are not of "purely theoretical" interest – they are of great importance for the argumentation developed in this book as a whole. One central argument is, for example, that struggles with the problem of disenchantment in the early 20th century must be understood in the context of changing scientific plausibility structures. The clearest example is found in the history of parapsychology, discussed at length in part three: the acceptance and rejection of parapsychology as a discipline can only be understood in the context of changing standards for scientific research, as well as changing interests in particular theoretical frameworks. Basing my approach on a methodological naturalism that does not rest on any *a priori* foundationalism about "right" academic conduct, but rather acknowledges the dynamic and changing nature of scientific "consensus", makes it possible to study and appreciate the diversity of superseded scientific cultures without losing sight of the standards that we must respect today if we do not want to lose our intellectual integrity. This, I believe, makes it possible to strike a balance between present-centeredness and relativism, and thus to shed light not only on the "external" social and cultural reasons for the successes and failures of specific research programmes, but on "internal" factors concerning the rationality of discovery and justification as well. The latter dimension can only be evaluated if we assume that there are "natural" and invariable constraints on processes of knowledge-building, and that our present scientific knowledge can shed light on how those natural invariables have determined the course of knowledge-cultures of the past.[2]

1 The Poverty of the Re-Enchantment Paradigm

In the late 1970s, amidst growing concern about environmental destruction and the threat of nuclear war, Weber's prophecy about "the fate of our times" came to be reinterpreted in entirely alarmist terms. Certain critics now came to see disenchantment as the grim fate of modern civilisation. In a politicised and spiritually

[2] In so doing I seek to follow the middle ground between "constructionism" and "realism" about science as argued by Philip Kitcher, 'A Plea for Science Studies'.

charged manner, they embraced a call for the *re-enchantment* of the world and of science. Assuming that the world had truly been disenchanted by a science that was "reductionist", "materialist", and "mechanistic", these scholar-activists would paint a dystopian view of the present that was furthermore used as a springboard for revisionist historiography. In the present section I will introduce and criticise the "re-enchantment paradigm" that arose in this context, exemplified by two of its strongest academic proponents. My central argument is that the re-enchantment paradigm, despite being expounded by academics and published in books on major university presses, should be considered part of the object of study rather than contributions to the field of scholarly analysis that I seek to develop here.

Morris Berman's *The Reenchantment of the World* (1981) seems to have set the stage for the re-enchantment paradigm. A PhD in the history of science from John Hopkins University and the author of an important work on the Royal Institution (*Social Change and Scientific Organization*, 1978), Berman would later use the history of science in a cultural struggle against what he saw as serious problems with modern society at large. His first book already included a distinctly critical perspective on the development of a utilitarian and instrumentalist ideology in the Royal Institution through the 19th century. In *The Reenchantment of the World*, however, the trends Berman had seen in this scientific organisation were only early symptoms of a cultural disease that had since infected the whole of modern society. The diagnosis was severe indeed, and Berman's formulations were coloured by the characteristic contempt of the moral entrepreneur:[3]

> The alienation and futility that characterized the perceptions of a handful of intellectuals at the beginning of the century have come to characterize the consciousness of the common man at its end. Jobs are stupefying, relationships vapid and transient, the arena of politics absurd. In the vacuum created by the collapse of traditional values, we have hysterical evangelical revivals, mass conversions to the Church of the Reverend Moon, and a general retreat into the oblivion provided by drugs, television, and tranquilizers. We also have a desperate search for therapy, by now a national obsession, as millions of Americans try to reconstruct their lives amidst a pervasive feeling of anomie and cultural disintegration.[4]

[3] For the concept of moral entrepreneurship, see Howard Becker, *Outsiders*.

[4] Berman, *The Reenchantment of the World*, 17.

Berman's diagnosis is one of degeneration, collapse, and crisis, echoing typically anti-modernist views of the "shallowness" of modern life and the loss of meaning and 'traditional values'. These, of course, were extrapolations from the disenchantment thesis: a growth in scientific rationality had come at the expense of "values" and "meaning". As Berman explained in the introduction to the book, the rationale for writing it had appeared when the author realised that something was missing from his more strictly academic (but still rather polemical) *Social Change and Scientific Organization*. In that book, Berman had been able 'only to hint at some of the problems that characterize life in the Western industrial nations' that he found 'profoundly disturbing'.[5] Seeking an explanation of these disturbing aspects of modern life a change in perspective was needed:

> I began that study in the belief that the roots of our dilemma were social and economic in nature; by the time I had completed it, I was convinced that I had omitted a whole epistemological dimension. *I began to feel, in other words, that something was wrong with our entire world view*. Western life seems to be drifting towards increasing entropy, economic and technological chaos, ecological disaster, and ultimately, psychic dismemberment and disintegration; and I have come to doubt that sociology and economics can by themselves generate an adequate explanation for such a state of affairs.[6]

Leaving strictly socio-economic analysis behind, Berman had now decided to take on a much more ambitious project: 'to grasp the modern era, from the sixteenth century to the present, as a whole, and to come to terms with the metaphysical presuppositions that define this period'.[7] In contrast to the principle of methodological individualism that was discussed in the previous chapter, Berman's is a pure example of an idealistic and totalising narrative where the agency of individual actors is ignored all together and subsumed under a strangely deterministic notion of abstract processes and ideological constrains directing history and society. Much in parallel to Marxist analyses, such immensely powerful structural forces can only be countered by concerted revolutionary action, in which entire populations subject themselves to the goals of a common will.

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[5] Ibid., 15.

[6] Ibid. Emphasis added.

[7] Ibid., 16.

One advantage of top-down structural analyses of this kind is that they are fairly easy to summarise. In Berman's case, the whole narrative is based on dichotomies that serve clearly polemical and evaluative ends: the faults of modernity are due primarily to 'the split between fact and value', and the distinction between subject and object. To frame these relations historically, Berman significantly employs an operative distinction between "enchantment" and "disenchantment," between "modern" and "pre-modern", and even between the "modern" and the "traditional".[8]

The problems Berman are concerned with – which we now recognise as nothing but the problem of disenchantment itself – began with the scientific revolution and the emergence of the "mechanical philosophy". Before the scientific revolution, an "enchanted" view of nature had still predominated. In Berman's own terminology, Western pre-modern civilisation had rested on a 'participating consciousness' that involved 'merger, or identification, with one's surroundings, and bespake a psychic wholeness that has long since passed from the scene'.[9] By contrast, the mechanical philosophy had brought about 'disenchantment' and 'non-participation'. These are the symptoms of what Berman with a supremely simplistic (yet predictable) generalisation calls 'the Cartesian paradigm'.[10]

The political implications – or perhaps premises – of these statements are obvious. Indeed, the historical part of Berman's argument works to support an explicitly speculative part on 'Tomorrow's Metaphysics' and 'The Politics of Consciousness'.[11] The assumption is that, since the cause of modernity's malaise is found in a certain disenchanted *mentality* based on the mechanistic philosophy, a new type of metaphysics must be part of the remedy. This metaphysical cure must involve a 'reenchantment of the world':

> For more than 99 percent of human history, the world was enchanted and man saw himself as an integral part of it. The complete reversal of this perception in a mere four hundred

[8] Ibid., 16-17.

[9] Ibid., 16. Here he echoes the theory of Lucien Lévy-Bruhl about the "savage mind" as resting upon a logic of "participation". Curiously, Berman takes it in a much more essentialist direction than Lévy-Bruhl himself ever did when he stresses that this mode of cognition has disappeared completely. See Lévy-Bruhl, *Le mentalité primitive*; cf. Hanegraaff, 'How Magic Survived the Disenchantment of the World'.

[10] Ibid., 24.

[11] E.g., ibid., 133-152, 191-299.

> years or so has destroyed the continuity of the human experience and the integrity of the human psyche. It has very nearly wrecked the planet as well. The only hope, or so it seems to me, lies in a reenchantment of the world.[12]

Berman is, however, painfully aware that a return to the past is simply not possible. The unspoiled, pristine, enchanted world of early- or pre-modern Europe is long since gone, and its views on nature are not likely to return. "Traditional values" cannot organically re-emerge from the new conditions of social life either; it all belongs to a past that is lost forever. The relation between past, future, and a troubled present thus becomes the 'crux of the modern dilemma':

> We cannot go back to alchemy or animism – at least that does not seem likely; but the alternative is the grim, scientistic, totally controlled world of nuclear reactors, microprocessors, and genetic engineering – a world that is virtually upon us already. *Some* type of holistic, or participating, consciousness and a corresponding sociopolitical formation have to emerge if we are to survive as a species. At this point … it is not at all evident what this change will involve; but the implication is that a way of life is slowly coming into being which will be vastly different from the epoch that has so deeply colored, in fact created, the details of our lives.[13]

All of the above brings Berman's analysis and his search for solutions very close to the type of "culture criticism" associated with the New Age literature that was emerging at the same time.[14] In fact, the historiography of science which Berman presents comes close to the, from a historical perspective, thoroughly discredited narrative of New Age science classics such as Fritjof Capra's *Tao of Physics* and *The Turning Point*.[15] While

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[12] Ibid., 23.

[13] Ibid., 23.

[14] For New Age as "culture criticism", see Hanegraaff, *New Age Religion*, 515-517. Hanegraaff emphasised that the criticism of the New Age was primarily levelled at "reductionism" and "dualism", and that the positive programme put forward in opposition to these polemically constructed ailments was one of "holism". As such, Berman must be seen as a central intellectual ally of New Age discourse concerning society, history, and cultural reform.

[15] On the questionable historiography of Capra, Ken Wilber, Theodore Roszak and other "counterculturalist" and "New Age" spokespersons, see especially John Brooke and Geoffrey Cantor, *Reconstructing Nature*, 75-105.

Berman is less interested in "oriental philosophy" than Capra was, their narratives of Western science are strikingly similar in important respects: both emphasise a "fall" connected with Cartesianism and the mechanistic philosophy.[16] Both, furthermore, emphasise the need for new philosophical and religious foundations for modern science, and both find some promise in certain strategically selected 20th century scientific developments – most notably quantum physics.[17]

Berman's most important source for a possible new metaphysics resting on an enchanted worldview is however the later writings of the highly original scientist and anthropologist, Gregory Bateson (1904–1980). In the anthology *Steps to an Ecology of Mind* (1972), and especially in the book *Mind and Nature* (1979), Bateson presented an eclectic holistic worldview, based on concepts and insights borrowed from fields as diverse as ecology, cybernetics, evolutionary biology, thermodynamics, mathematics, psychology, and anthropology.[18] By the end of the 1970s, Bateson's highly creative, supremely interdisciplinary, and equally ambitious work had become briefly, but significantly integrated at the Esalen Institute in Big Sur, California – the hub of the human potential movement and a crucial intellectual laboratory of the later New Age movement, which has had a deep impact on "self spirituality" in America and beyond.[19]

Using Bateson's holism – or at least Berman's own understanding of it[20] – as paradigm, Berman describes the polar difference between the 'world view of modern

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[16] Compare the narrative reproduced above with Capra, *Tao of Physics*, 21-31.

[17] Berman makes such insinuations in the chapters 'Prolegomena to Any Future Metaphysics', and 'Eros Regained'; Berman, *Reenchantment of the World*, 133-189. While Berman's main focus is on psychology, particularly Wilhelm Reich, he does spend some time speculating on the anti-disenchantment implications of Heisenberg's uncertainty principle (pp. 143-145). The emergence of quantum mechanics, its relation to wider cultural policies, worldviews, and revisionist histories of physics will be explored in some detail in the following chapters of part two.

[18] For an introduction to Bateson's programme, one is advised to start by reading his lecture 'Form, Substance, and Difference', reprinted in *Steps to an Ecology of Mind*, 448-464.

[19] See Jeffrey Kripal, *Esalen*. For Bateson's involvement and connections to the milieu, see especially pp. 101, 266, 306-308.

[20] Bateson is notoriously hard to understand, not least because of his eclectic style drawing on examples from a great number of disciplines. As Bateson wrote in 1971, this often seemed to frustrate his students who would complain that 'Bateson knows something which he does not tell you,' and that '[t]here is something behind what Bateson says, but he never says what it is.' Bateson, 'The Science of Mind and Order', xvii (reprinted in *Steps to an Ecology of Mind*).

science' and a new reenchanted "Batesonian" worldview.[21] As is common in the genre of New Age science, the "modern scientific worldview" is presented as a conveniently caricatured straw man. "It" is presented as a homogenous, monolithic entity that is allegedly mechanistic, materialistic, and reductionist. The resulting comparison of modern science and Batesonian holism thus says very little about the material it presumes to comment upon, but a lot about the ideological underpinnings of the analysis itself. The following table gives the essentials of Berman's comparison:

Figure 2:

Berman's comparison of the "Cartesian" and "Batesonian" worldviews[22]

Worldview of modern science	*Worldview of Batesonian holism*
No relationship between fact and value.	Fact and value inseparable.
Nature is known from the outside, and phenomena are examined in abstraction from their context (the experiment).	Nature is revealed in our relations with it, and phenomena can be known only in context (participant observation).
Goal is conscious, empirical control over nature.	Unconscious mind is primary; goal is wisdom, beauty, grace.
Descriptions are abstract, mathematical; only that which can be measured is real.	Descriptions are a mixture of the abstract and the concrete; quality takes precedence over quantity.
Mind is separate from body, subject is separate from object.	Mind/body, subject/object, are each two aspects of the same process.
Linear time, infinite progress; we can in principle know all of reality.	Circuitry (single variables in the system cannot be maximised); we cannot in principle know more than a fraction of reality.
Logic is either/or; emotions are epiphenomenal.	Logic is both/and (dialectical); the heart has precise algorithms.
Atomism:	Holism:
1. Only matter and motion are real.	1. Process, form, relationship are primary.
2. The whole is nothing more than	2. Wholes have properties that parts do

[21] Berman, *Reenchantment of the World*, 238.

[22] This table of comparison has been adopted from Berman, *Reenchantment of the World*, 238.

the sum of its parts.	not have.
3. Living systems are in principle reducible to inorganic matter; nature is ultimately dead.	3. Living systems, or Minds, are not reducible to their components; nature is alive.

We see that Berman's description of the modern scientific worldview tallies with the Weberian idea of science in a disenchanted world. The fact/value distinction has been kept as the first major point of difference between the disenchanted modern worldview and the "holistic" view, paralleling the axiological dimension of disenchantment. A stress on objectivity, measurability, empirical manipulation and control, and an extreme optimism about knowledge of the world are likewise assumptions about modern science that we recognise from the epistemological dimension of Weberian disenchantment. In Berman's comparative scheme, the re-enchanted worldview of Batesonian holism becomes a complete antithesis to disenchantment. It wants to conceive of science in terms that would have been utterly unacceptable to Weber, characteristic rather of those "swindlers and self-deceivers" who refused to undergo the intellectual sacrifice.

The contrasts portrayed by Berman significantly occlude historical realities, which are always much too complex to easily serve ideological agendas.[23] The description of the 'worldview of modern science' does, however, come close to certain *ideologies* of science that are often, and typically derogatorily, termed "scientism". Although there are many definitions of this term, scientism may refer to ideologies stressing the universality and objectivity of (natural) science, and wishing to expand its sphere of influence throughout society.[24] However, even the most fiercely scientistic movements of the 19th century would typically disagree with several of the points on the left-hand side of the comparison above. For example, attempts to overcome the fact/value distinction and develop valid ethical and moral programmes based on scientific knowledge were a common trademark of 19th century ideologies of science.

[23] As far as the actual scientific theories and discussions go, this point will be argued and extensively supported with references in part two.

[24] Here I follow the definition of scientism found in Richard Olson, *Science and Scientism in Nineteenth-Century Europe*. For other discussions of the term, see e.g. Friedrich A. Hayek, *The Counter-Revolution of Science*, 15-16; Mikael Stenmark, 'What is Scientism?'; Michael Shermer, 'The Shamans of Scientism'; Hammer, *Claiming Knowledge*, 206.

The utilitarianism of John Stuart Mill and his followers should in fact be seen as a central example (although Berman would likely see Mill's approach as amounting to an *instrumentalization* of human values), as should Auguste Comte's positivist "religion of humanity", the various forms of secular humanism, and programmes based on ethical extrapolations from Darwinism, to name but the most influential and well-known examples.[25] Whether one agrees with the prospect of such attempts or not is another matter; either way, the claim that "scientistic" ideologies relied on the fact/value distinction is factually incorrect.

While seriously flawed as a scholarly analysis, Berman's work has been successful as a rallying cry for other academic activists sharing his central persuasions. The book has been quoted in works concerned with developing radical non-anthropocentric views of ecology,[26] by feminist theorists of science,[27] and has been used to support the attempt to merge ecology and feminism in a unified "ecofeminism".[28] Unsurprisingly, Berman's work has also made a sizeable impact on the New Age science discourse, quoted in such books as Larry Dossey's *Recovering the Soul* (1989), Rupert Sheldrake's *The Rebirth of Nature* (1991), and Amit Goswami's *The Self-Aware Universe* (1993). In fact, when Berman projects the disenchantment/enchantment dichotomy onto historical material he creates a typical "fall and redemption" narrative amounting to an "emic historiography of science". It homogenises and demonises "modernity" and "modern science", romanticises the premodern, and builds a utopian historical eschatology around the dream of a re-enchanted, holistic society of the future.[29]

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[25] For overviews of these and other irreligious worldview movements, see e.g. Jennifer Michael Hecht, *The End of the Soul*; Bernard Lightman, *The Origins of Agnosticism*; Colin Campbell, *Toward a Sociology of Irreligion*; Richard Olson, *Science and Scientism in Nineteenth-Century Europe*.

[26] E.g. Warwick Fox, *Toward a Transpersonal Ecology*. It was also discussed widely in journals connected with "deep ecology" and related environmental discourse, such as *Environmental Ethics*, and *The Trumpeter: Journal of Ecosophy*. For deep ecology's interaction with esoteric discourses more generally, see J. Christian Greer, 'Deep Ecology and the Study of Western Esotericism'.

[27] E.g. Sandra G. Harding, *Whose Science? Whose Knowledge?*

[28] E.g. Irene Diamond & Gloria Feman Orenstein (eds.), *Reweaving the World*.

[29] The notion of an emic historiography of science, and its relation to the *etic* historiography of science, will be developed further throughout part two of this work. I am proposing this distinction as a special case of the emic vs. etic historiography that Olav Hammer has operationalised as a critical tool in the study of self-fashioning and mythmaking among modern esoteric and religious spokespersons. See Hammer, *Claiming Knowledge*, 85-89, 155-181; cf. Asprem & Granholm, 'Constructing Esotericisms'.

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I will now turn to another academic contributor to the re-enchantment paradigm, namely the philosopher of religion David Ray Griffin.[30] In 1988, Griffin introduced a book series at State University of New York Press, concerned with what he called 'Constructive Postmodern Thought'.[31] This series, which by now includes thirty-two books, was launched with an edited volume entitled *The Reenchantment of Science* (1988). The volume continued the main trend from Berman's book, mixing history and philosophy of science with explicit connections to the religious discourse of the contemporaneous New Age movement. It stands as another primary example of the re-enchantment paradigm, highlighting crucial aspects of the uses of disenchantment within this brand of "postmodern" academic activism.

In the introduction to the book series on 'Constructive Postmodern Though', Griffin was clear to distance his own brand of postmodernism from the philosophical stances arising from 'pragmatism, physicalism, Ludwig Wittgenstein, Martin Heidegger, and Jacques Derrida and other recent French thinkers'.[32] Griffin considered these other positions to be part of a '*deconstructive* or *eliminative* postmodernism', which only amounted to relativism and nihilism. He even proposed that such eliminative postmodernism did not deserve to be called postmodern at all, but rather '*ultramodernism*, in that its eliminations result from carrying modern premises to their logical conclusions'.[33] Griffin's own postmodernism was, by contrast, explicitly aimed at *overcoming* modernity. Since he also identified the project of modernity with *disenchantment*, true postmodernism had to embrace a re-enchantment of nature,

[30] More recently, Griffin has become notorious for his deep involvement with the 9/11 "truth movement", having written no less than eleven books of rampant conspiracy theory. For a recent review and criticism of the "truth movement", see Jonathan Kay, *Among the Truthers*.

[31] The series has published 32 books since its inception in 1988 until 2004, when the last publication appeared. Themes include quantum physics and Whiteheadian process philosophy, criticisms of modern medicine, religion and naturalism, politics and the ecological crisis, and various approaches to "postmodern theology". For a full list, see SUNY Press' catalogue of the series: http://www.sunypress.edu/Searchadv.aspx?IsSubmit=true&CategoryID=6899&pagenum=1&groupnow=1 (accessed May 19, 2011).

[32] Griffin, 'Introduction to SUNY Series in Constructive Postmodern Thought', x.

[33] Ibid.

society, and science. Griffin's position was thus to be called a '*constructive* or *revisionary*' postmodernism:

> It seeks to overcome the modern worldview not by eliminating the possibility of worldviews as such, but by constructing a postmodern worldview through revision of modern premises and traditional concepts. This constructive or revisionary postmodernism involves a new unity of scientific, ethical, aesthetic, and religious intuitions. It rejects not science as such but only that scientism in which the data of the modern natural sciences are alone allowed to contribute to the construction of our worldview.[34]

The essays collected by Griffin for the start of the new series discuss 'a *reversal of the modern disenchantment of science and nature* and how this reversal fits within the larger contemporary reassessment of natural science'.[35] In doing this, Griffin's main point is however to separate "modern science" from the general taxon of "science" as such, and to claim that it is only science in its "modern" branch that has been a disenchanting and hence destructive force. In other words, Griffin claims there is no *necessary* link between scientific activity and the disenchantment of the world, which means that a re-enchanted science remains a distinct possibility.[36] Following this train of thought, Griffin listed four contemporary trends that he felt were about to break the spell of disenchantment: 'a new view of the *nature of* science, a new view of the *origin of* modern science, new developments *within science* itself, and reflections on the *mind-body problem*'.[37]

By 'a new view of the nature of science' Griffin refers to the "postmodern" developments in social and historical studies of science that were becoming fashionable at the time. In Griffin's opinion, this development was of unprecedented epistemological relevance because it undermined science's claim to objectivity:

> The recognition of the way our interpretations and even perceptions are conditioned by language, by culture in general, by the dominant worldview of the time, by personal (including unconscious) interests, and by interests based on race, gender, and social class –

[34] Ibid.

[35] Griffin, 'Introduction: The Reenchantment of Science', 1. Italics added.

[36] Ibid., 7-8.

[37] Ibid., 8. Italics added.

> this recognition has led many to the conclusion that a worldview is wholly a construction or a projection, not at all a reflection of discovery or the way things "really" are.[38]

Despite seeing hope in this development, Griffin writes about the constructivist interpretation of science with noticeable reservation. In fact, he goes on to acknowledge that this 'extreme view' is unsatisfying and self-refuting, opting for a more nuanced position instead. Griffin argues that the constructionist and relativist attack strikes primarily at the *worldviews* sometimes supposed by science, rather than at the actual practice of science as such. The scientific enterprise does still have a privileged position with regards to creating "objective knowledge" about the natural world, even despite the obstacles of all too human interests interfering with the process, but this authority does not extend to the interpretations of facts and the construction of worldviews. Griffin's perspective thus comes curiously close to Weber's original thesis, in which worldviews cannot strictly speaking be extrapolated from natural facts.[39] Griffin's constructive postmodernism appears much less radical than it claims on the surface.

As to the 'new view of the origin of modern science', Griffin broke the news that historians of early modern science were now suggesting that the heroes of the scientific revolution had not all promoted disenchanted worldviews. Even the mechanistic philosophy was originally tied to theological programs in natural philosophy.[40] Surprisingly, perhaps, Griffin only makes a passing reference to the influential work of Frances Yates in this context, and her notion of a "Hermetic phase" of the scientific revolution.[41] At any rate, the ability to see the complexities of early modern natural philosophy, including the complexity of the mechanical philosophy itself, makes Griffin's use of the history of science much more nuanced than the monolithic and demonised view of "Cartesianism" presented by Berman.

Both of the above two points were intended to show that science does not *necessitate* disenchantment, suggesting to the contrary that enchanted perspectives

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[38] Ibid., 9.

[39] Ibid., 9-10.

[40] Ibid., 10-13.

[41] Ibid., 37 n43. The Yates thesis did have a significant reception in countercultural discourses of the period, as it could easily be co-opted to portray a historical struggle between an underground of enchantment and an establishment of disenchantment and/or dogmatic Christianity. See Hanegraaff, 'Beyond the Yates Paradigm', 18-21.

have been at the origin of modern science itself. Griffin's last two points move on to suggest that an impulse towards re-enchantment is currently underway in scientific and philosophical discourse.[42] Quantum mechanics is a usual suspect, although Griffin voices reservations about the all too common jump from its scientific interpretations to "mysticism" or "Eastern spirituality". He cites David Bohm, whose theory of the "implicate order" received much attention in New Age circles in the 1980s, as a more promising spokesperson. Suitably, Bohm contributed a chapter to the book itself.[43] Moving from physics to biology, Griffin discusses the organicist notion of "downward causation" (i.e. that organisms as wholes may in some sense determine the development of their constituent parts, rather than the other way around) as another trend pointing towards re-enchantment. The "Gaia hypothesis" of James Lovelock is brought in as a radical example of organistic and holistic thinking on a grand scale,[44] while Rupert Sheldrake's neovitalistic "morphic resonance" theory is mentioned as another development in biology that seemed to challenge mechanistic and reductionist modes of explanation.[45] As we shall see in chapter five, all of these biological questions concerning vitalism and organicism were in fact prefigured during the 1920s and 1930s. Indeed, as a re-enchantment theorist Griffin draws on a particular organicist school of thought that we shall discuss at length in later chapters.[46]

The search for signs of enchantment in science continues with Griffin's last point: 'reflections on the relation between mind and matter'.[47] Referring to the traditional mind-body problem, Griffin questions the validity of the "disenchanted scientific worldview" as it is apparently incapable of accounting for minds:

> both dualism and materialism are unintelligible. But if the modern premise that the elementary units of nature are insentient is accepted, dualism and materialism are the only

[42] Griffin, 'Introduction', 13.

[43] Ibid., 14. Cf. Bohm, 'Postmodern Science and a Postmodern World'.

[44] Griffin, 'Introduction: The Reenchantment of Science', 15.

[45] Ibid., 16-17.

[46] I am thinking in particular of the more theologically oriented segment of so-called emergence theory. Griffin is particularly preoccupied with Alfred North Whitehead's "process philosophy", a school of thought that will be discussed in the context of new natural theologies in chapter six below.

[47] Griffin, 'Introduction: The Reenchantment of Science', 17-21.

> options. This fact suggests that the premise that lies behind the modern disenchantment of the world is false.[48]

Griffin considers this to be 'a strong philosophical argument', suggesting that a new scientific worldview is needed.

'Whereas modern science has led to the disenchantment of the world and itself, a number of factors today are converging towards a postmodern organicism in which science and the world are reenchanted', Griffin concludes.[49] Organicism is not only taken as a theoretical framework for understanding nature, however: it is also clear that organicist thinking is to inform the ordering of society, including the academy. Referring to the philosopher of science Stephen Toulmin's book, *The Return to Cosmology* (1982), re-enchantment is aligned with the quest for unification of the "special sciences", which is to be brought about through a dialogue between scientists, philosophers, and theologians.[50] Following the reasoning that we saw in Berman's work, then, the promise of an organic unification of knowledge and the return of a "holistic" conception of the world assume messianic proportions. Somehow, changes in the structure of human knowledge are supposed to have a salvific effect on humanity and the world itself, leading to freedom, fulfilment, and ecological harmony.

* * *

In closing this discussion of the re-enchantment paradigm we should pay attention to some particularly striking features. Advocates of re-enchantment appear to be struggling not only with "disenchantment" as such, but with problems associated with *specialisation* and *fragmentation*. Knowledge is specialised, society fragmented, and people are not "at home in the world". From a sociological perspective, the subjective experience and moral condemnation of "fragmentation" may be described as responses to the societal processes of functional differentiation that have characterised Western modernity: societies have become more complex, and different spheres have been differentiated from each other to fulfil different functions. However, while a sociologist finds the *reasons* for differentiation in social processes driven by the choices and actions

[48] Ibid., 21.

[49] Ibid., 30.

[50] Ibid., 30-31.

of individual social actors, both Berman and Griffin reveal curious idealistic biases, attributing formidable agency to ideas and worldviews. According to these authors the fragmentation of knowledge and the fragmentation of society are two sides of the same coin. The twin fragmentation of knowledge/society is furthermore presented as the active cause of ecological crises, psychological "dismemberment", and moral degeneration. A call for re-enchantment, unification, and holism is the answer to these ailments. The diagnosis is philosophical, and the treatment proscribed is an infusion of the *idea* of wholeness. These idealistic presuppositions put the aspirations of re-enchantment theorists very close to some of the movements of the early 20th century that we shall consider at length in later chapters. Authors such as Berman and Griffin struggle with the very same problem of disenchantment as early 20th century authors did, finding solutions that are indebted to their often unnamed forbears.

The underlying assumptions of the re-enchantment paradigm also appear to have much in common with the melancholia so often characteristic of the esoteric visionary.[51] The aspiration is nothing less than absolute knowledge, the attainment of which will heal the individual, the society, and the whole wide world. Only when total knowledge is restored – and the whole of society recants its "reductionist" errors and converts to the Good and True philosophy of wholeness – can the world be healed. The re-enchantment paradigm is thus located in a highly problematic borderland between academic scholarship and politico-spiritual advocacy, with the attitudes of the latter typically triumphing over the needs of the former.

While Weber's original disenchantment thesis may have harboured certain philosophical and theological biases, as I argued in chapter one, the re-enchantment paradigm makes such biases explicit in its eagerness to *counter* disenchantment. Here, specific philosophical and theological positions are elevated to criteria for interpreting and judging historical material. This renders the re-enchantment paradigm useless in view of our present concerns. It should be considered a cluster of specifically post-war *responses* to the problem of disenchantment: for the approach I seek to develop here, the re-enchantment paradigm must be considered an *explanandum* rather than an *explanans*.

[51] For examples, see the chapters in part four of this book.

2 The Reach of Science: Naturalism and Scientific Worldviews

Both the original disenchantment thesis and the more recent re-enchantment paradigm are built on evident philosophical and theological biases, and for this reason end up portraying the relationship between science and worldviews in ways that are either idealised or demonised. We still need a better assessment of the *actual*, as opposed to the ideal and the dystopian, relation between science and worldviews in historical reality. In the present section I will provide a constructive discussion by considering a term that is of great importance for understanding this relation in the period that concerns us here: scientific naturalism.

We may distinguish between two different meanings for the term scientific naturalism. One refers to a historical intellectual movement in the second half of the 19th century, developed by leading spokespersons of science during the height of its professionalisation process. For sake of clarity, and following convention, I refer to this type as "Victorian scientific naturalism". The other meaning of naturalism is broader, and refers to a range of philosophical positions associated with certain epistemological and/or ontological commitments based above all on the idea of the *continuity* and *self-sufficiency* of nature. I will refer to this latter class as "philosophical naturalism".

The historical movement of Victorian scientific naturalism is crucial to the "worldview of science" discussion, because it constitutes an explicit attempt by scientists and public spokespersons of the newly professionalised natural sciences to develop and promote worldviews for a modern, industrialised age. As such, Victorian naturalism is an important intellectual context of science at the beginning of the 20th century, and, I shall argue, a source of some of the stereotypes of science that we have seen reproduced both by Weber and by the later re-enchantment paradigm. The philosophical current is also important to our concerns, because it encompasses a cluster of positions in the philosophy of science that typically *diverge* from the assumptions about science and worldviews informing the original disenchantment thesis. By comparing and contrasting naturalism with the assumptions of disenchantment we are able to see more clearly what is really at stake in the "problem of disenchantment", and to place it within a field of philosophical and scientific tension that arises between naturalisation and disenchantment.

VICTORIAN SCIENTIFIC NATURALISM: A HISTORICAL PERSPECTIVE

Victorian scientific naturalism was an intellectual movement that developed through the 19th century in Britain. As Bernard Lightman writes, it should be considered 'the English equivalent of the cult of science in vogue throughout Europe during the second half of the nineteenth century'.[52] Victorian naturalism is part of a broader family of ideas about science in this period, making it the sister of German scientific materialism and Comtean positivism in France.[53] The intellectual roots of the movement, however, go back to Enlightenment philosophy. The influence of the British empiricists, particularly Locke and Hume, together with (perhaps selective) readings of Kant, helped form the epistemological basis of the movement. But this epistemological background was crucially reinforced by developments internal to the sciences and by new emerging discourses on nature, above all evolutionary theory and new theories of matter and energy. From the middle of the century a fully-fledged and articulate movement emerged around the concept of a "New Nature"[54], a movement that would significantly shape the intellectual climate of the Victorian period. Combining 'research, polemic wit, and literary eloquence,' the scientific naturalists 'defended and propagated a scientific world view based on atomism, conservation of energy, and evolution'.[55] In doing so, the naturalists engaged in what Thomas Gieryn has called "boundary-work", protecting and legitimising the concerns of the emerging social class of scientific professionals, while excluding and attacking opponents and threats to the profession's status.[56]

As Roger Luckhurst has suggested, from around the year 1870 we can talk about scientific naturalism as an "ideological settlement".[57] The concept of "settlement" is borrowed from Bruno Latour, and refers to the binding together of

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[52] Lightman, *The Origins of Agnosticism*, 28.

[53] For the developments on the Continent, see Jennifer Hecht, *The End of the Soul* for France, and Frederick Gregory, *Scientific Materialism in Nineteenth Century Germany* for the German context. For an international overview, see Richard G. Olson, *Science and Scientism in Nineteenth-Century Europe*.

[54] Turner, *Between Science and Religion*, 8-17.

[55] Frank Miller Turner, 'Victorian Scientific Naturalism and Thomas Carlyle', 131.

[56] Gieryn, 'Boundary-Work and the Demarcation of Science from Non-Science'; idem, *Cultural Boundaries of Science*, 37-64.

[57] Luckhurst, *Invention of Telepathy*, 12.

> the epistemological question of how we can know the outside world, the psychological question of how a mind can maintain a connection with the outside world, the political question of how we can keep order in society, and the moral question of how we can live a good life – to sum up, "out there", "in there", "down there", and "up there".[58]

These are essentially worldview questions, and the scientific naturalists ventured to answer them all with reference to their conception of science and their new knowledge of the natural world. They argued that the soul was nailed to the material brain, which was itself a product of evolution. Varieties of "social Darwinism" offered solutions to societal problems, and "agnosticism" was proposed as the only proper epistemological and religious attitude. Meanwhile, a whole programme for educational, industrial and governmental reform, on naturalistic principles, was presented as *via regia* to progress for the Empire and heightened standards of living for its people.

To understand how this happened, it is important to look at the actual individuals involved with the movement. The ascendancy of Victorian scientific naturalism is in fact connected with a rather small coterie of people, which had gathered in 1864 to form what became known as the "X-Club".[59] While this may sound like the name of a sinister conspiracy, the club was really nothing more than a group of influential friends who threw regular dinner parties in which they made sure to discuss important issues of science policy. As one contemporary observer wrote, the group 'plotted an aggressive campaign to reclaim nature from theology and to place scientists at the head of English culture'.[60] They largely succeeded in their agenda: this small coterie of intellectuals ended up playing a crucial role in the professionalisation of science, elevating the status of the vocation and liberate it from clerical authorities.[61]

As the X-Club was essentially a dinner club, no formal protocols were kept of their meetings. It remained an informal network, which met off record to discuss and plan 'concerted action' for the advancement of 'science, pure and free, untrammelled by

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[58] Latour, *Pandora's Hope*, 310. Note that Latour talked more specifically about what he called the "modernist settlement".

[59] Ruth Barton, '"Huxley, Lubbock, and Half a Dozen Others": Professionals and Gentlemen in the Formation of the X Club'.

[60] James Moore, quoted in Luckhurst, *Invention of Telepathy*, 13.

[61] Turner, 'The Victorian Conflict between Science and Religion', 180-200.

religious dogma'.[62] The nine people who made up the group were a mix of scientific professionals and gentlemanly amateurs. The influential biologist Thomas Henry Huxley, the surgeons George Busk and Joseph Hooker, the physicists John Tyndall and Thomas Hirst, and the chemist Edward Frankland all shared the experience of having struggled to find jobs as scientific professionals in a society where such positions were largely given by patronage rather than merit – patronage that was, furthermore, largely under the influence of clergy.[63] Other members included Herbert Spencer, who went further than any other in attempting to subsume all knowledge to an evolutionary paradigm through his "synthetic philosophy". Another group member, John Lubbock, was an amateur scientist and a polymath, but as a Baron, a banker, and a Member of Parliament he provided important links to the worlds of politics and finance.

The X-Club network attained remarkable success. Between themselves, members of the dinner club held the presidency of the Royal Society three times in a row (Joseph Hooker, 1873-1878; William Spottiswoode, 1878-1883; T. H. Huxley, 1883-1885), they maintained authorial dominance in the newly formed journal *Nature*, held key positions in institutions such as the Royal Society of Mines, the Royal Institution, and University College London; additionally X-Club members were used as consultants for the government on issues of scientific research, industry, and education.[64] Through such concerted efforts the X-Club successfully raised the prestige of the naturalistic programme by linking it to the economy, the military, and the alleviation of social injustice.[65] Naturalism became, as Lightman suggests, 'the apologetic tool of the Victorian middle class in its attempts to generate a new Weltanschauung, one appropriate in a competitive, urban, and industrial world, as a replacement for old philosophies and theologies suitable to a pastoral, agrarian, and aristocratic world'.[66] Again, this was a directed effort to produce a complete worldview for the modern, industrial age, replacing outmoded religious worldviews that had been shaped to fit life in the Bronze Age.

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[62] Thomas Hirst, quoted in Barton, '"Huxley, Lubbock, and Half a Dozen Others"', 411.

[63] Luckhurst, *Invention of Telepathy*, 13; Turner, 'The Victorian Conflict between Science and Religion', 181. Cf. Barton, '"Huxley, Lubbock, and Half a Dozen Others"'.

[64] Turner, 'The Victorian Conflict between Science and Religion', 180-181.

[65] Ibid.

[66] Lightman, *The Origins of Agnosticism*, 29.

What, then, were the basic tenets of this scientific *Welanschauung*? What did the "New Nature" of the naturalists look like? In the words of Bernard Lightman, scientific naturalism was

> naturalistic in the sense it would permit no recourse to causes not present in empirically observed nature, and it was scientific because nature was interpreted according to three major mid-century scientific theories, the atomic theory of matter, the conservation of energy, and evolution.[67]

Out of these theories were extracted, perhaps by allegory and metaphor rather than by derivation, certain tenets that were thought relevant to all fields of society. The most basic principles of the New Nature were those of the continuity of nature and the uniformity of life. All life was assumed to have evolved from the same primordial "protoplasm", which was itself the product of a uniform and autonomous material world. The evolutionary paradigms of Darwin, Huxley, and Spencer all proposed solutions developed from this general idea. The human species was not metaphysically privileged among the animals; our mental and "spiritual" life did not imply any "higher worlds". Naturalism was ontologically *monistic*; the world consists of only one kind of stuff – matter – meaning that concepts of "soul" and "consciousness" must either be reduced to and explained in terms of this stuff, or be eradicated from our ontological vocabulary altogether.[68] The same would, of course, hold for postulations of spirits or ghosts, while a god could at best be allowed in the form of a causally inconsequential deism: an absentee god that does not care and does not interfere with the course of life in the universe. This would be a god that, in terms of Huxley's agnosticism, would remain forever unknown and unknowable. To claim anything specific about this god would remain absurd, as would the attempt to infer anything concerning ethics or values from its mere hypothetical existence.[69]

The unified, material world postulated by scientific naturalism was governed by invariable natural law, rejecting the possibility of any miraculous incursions or interventions. The impossibility of miracles would typically be argued with reference to

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[67] Lightman, *The Origins of Agnosticism*, 28; cf. Turner, *Between Science and Religion*, 8-37.

[68] See e.g. Maudsley, *The Physiology and Pathology of Mind*; cf. Olson, *Science and Scientism*, 240-243.

[69] For Huxley's agnosticism, and the debate it sparked in the late 19th century, see chapter seven.

the principles of *thermodynamics*, formulated at the middle of the century by the Scottish engineer William Rankine, the German physicist Rudolf Clausius, and William Thomson (Lord Kelvin).[70] By postulating that the universe as a whole was a thermodynamically *closed* system, the conservation of energy meant that miracles were impossible because there could be no mysterious input of energy into a system. Miracles could thus be re-defined as breaking the first law of thermodynamics.

Extending from the ideas of invariable law, ontological monism, and the uniformity of nature, is the idea of the *universality* of science. The scientific method is universal, it is the only secure way to knowledge, and it ought to be applied to all fields of inquiry in which truth or certainty is desired. This notion, a strong form of epistemic optimism in the same sense as we saw it in the disenchantment thesis, was used by the Victorian naturalists to warrant a scientific *expansionism*, extending science's influence to new areas of society, from industrial production and agriculture, to social planning, ethics, and governance.[71] In later chapters we will see that religion, too, became subjected to this expansionist programme, giving rise to the prospective disciplines of psychical research and parapsychology, as well as to a scientific reconsideration of religion in the form of new natural theologies.[72] The epistemic optimism of the naturalists in this sense extended further than the disenchantment of the world would have allowed.

The idea of progress was central to the naturalistic programme. The Victorian naturalists generally shared Auguste Comte's notion of the progression of human thought through developmental stages, rising from a theological and religious-metaphysical stage to a gradually more scientific state of "positive knowledge". The anthropologist James George Frazer's *Golden Bough* is a *locus classicus* for the Victorian variety of this idea. Sometimes it would also be allied with developmental hypotheses borrowed from evolutionary theory. For example, the naturalists' embrace of a social policy of "functional liberal elitism" prompted speculations on the inheritance of genius and talent, which would warrant policies of selective breeding of human beings in order

[70] See e.g. Crosbie Smith and M. Norton Wise, *Energy and Empire*.

[71] Cf. Luckhurst, *Invention of Telepathy*, 22.

[72] For psychical research and parapsychology, see the chapters in part three. For new natural theologies, see chapter six.

to secure the survival of a superior class of people that could, in turn, be the guardians of future progress.[73]

All of these diverse ideas were brought together in the attempt to erect a consistent worldview based on the most recent science. Since scientific knowledge was thought to bring an exact and objective understanding of reality, it was also ultimately more *useful* than other types of knowledge, which was why expansion of the scientific enterprise could be linked with progress on all levels of society. In short, a powerful image of science was created, replete with implications for worldviews, politics, industry, and society. The view of the Victorian naturalists, I shall argue, has had a considerable influence on later generations, including among those critical of the scientific enterprise.

Naturalism as a Philosophical Current

The philosophical current of naturalism springs, in some sense, from the historical movement just described. In the 20th century it has taken other directions, giving rise to a number of different contributions to specific fields of academic philosophy, including philosophy of mind, philosophy of science, philosophy of language, logic, ethics, and metaphysics. The sheer diversity of the philosophical current of naturalism means that it is close to impossible to find one, single unifying point that all the systems of thought that have been espoused as "naturalistic" have in common.[74] The philosopher Owen Flanagan has, for example, identified fifteen different definitions of naturalism in the philosophical literature.[75] While some of them are mutually contradictory, many share obvious commonalities with the 19th century variety described above. Naturalism has, for example, been taken to imply that '[t]here is no room, or no need, for the invocation of immaterial agents or forces or causes in describing or accounting for things'; or that '[e]thics can be done without invoking theological or Platonic foundations', claiming that

[73] Turner, 'Victorian Scientific Naturalism and Thomas Carlyle', 137-138. For a clearer overview of the many different models of evolutionary change in this period, and still in the early decades of the 20th century, see chapter five below.

[74] Some state-of-the-art discussions include Hilary Kornblith, 'Naturalism'; Phillip Kitcher, 'The Naturalists Return'; Mario De Caro & David Macarthur (eds.), *Naturalism in Question*; Flanagan, 'Varieties of Naturalism'.

[75] Flanagan, 'Varieties of Naturalism', 430-431.

a basis for proper conduct can 'be defended naturalistically'.[76] This position would amount to a naturalised ethics, which directly opposes the axiological scepticism of disenchantment. Additionally, naturalism may claim 'that most knowledge is a posteriori'.[77] In that case, a radical form of empiricism is involved, holding that so-called *a priori* and analytical truth (in the tradition stemming from Kant) is in reality masked *a posteriori* knowledge, a controversial implication being that even rules of logic or mathematics are in principle open for revision in light of new evidence.[78] Through a brief sketch of philosophical naturalism, it will be seen that it stands in conflict with the view of natural science that we have encountered in Weber as well as in the re-enchantment paradigm.

Philosophical naturalism took a distinct turn with William Van Orman Quine's writings on epistemology and science form the 1950s onwards.[79] The most basic position of Quinean naturalism is that philosophy is continuous with science, and cannot meaningfully or responsibly be practiced in separation from it: it gives primacy to the empirical sciences over and above philosophical considerations. The philosophical naturalist is suspicious about claims to *a priori* knowledge, which had been the domain of the "pure" philosopher since Kant. The naturalist, furthermore, insists that "foundationalism" about epistemology is not a viable option: the question of how we gain knowledge cannot be grounded on "necessary truths" that are grasped by *a priori* reasoning.[80] Instead, epistemology ought to be informed by the empirical or scientific study of how knowledge is *actually* attained in the natural world in which the quest for knowledge takes place: how our senses work, what happens in perception, how human minds function, how we reason, and how we delude ourselves are all scientific questions that must be at the basis of any sound epistemology.[81] In the

[76] Ibid., 431.

[77] Ibid.

[78] This was one of the controversial but influential arguments of Willard Van Orman Quine's 1951 article, 'Two Dogmas of Empiricism'.

[79] Quine, 'Two Dogmas of Empiricism'; idem, 'Epistemology Naturalized'; cf. Kitcher, 'The Naturalists Return'.

[80] For a more recent extrapolation on this view, see Penelope Maddy, *Second Philosophy*.

[81] Kornblith (ed.), *Naturalizing Epistemology*; idem, 'Naturalism', 46; Kitcher, 'The Naturalists Return', 75-76.

naturalistic project, every single claim, doctrine or heuristic is revisable in principle in view of new experience.[82]

At this point we might add that there has been a tendency to distinguish between *ontological* naturalism on the one hand, and *epistemological* (or *methodological*) naturalism on the other.[83] One concerns what really exists in the world, while the other concerns how we can gain knowledge about whatever there is in the world. Epistemological naturalism, in its most simple definition, simply means adhering to the scientific method(s) – and, crucially, engaging in rational conversation with scientific experts in any field in which one seeks knowledge. Ontological naturalism, on an equally simple definition, means to assume the world to be composed of the actual entities that the best available science at any given point says that it is composed of.[84] Naturalistic ontology implies, in other words, a stance of scientific realism that may or may not be shared by the naturalistic epistemologist.

It should, however, be noted that philosophical naturalism is about more than epistemology and metaphysics. It has also been a considerable impulse in meta-ethics. In view of the axiological scepticism of disenchantment this is a particularly relevant branch to mention. Although varieties are many, naturalised ethics is fundamentally in opposition to roughly Platonic views, in the sense that it does not seek the source of ethical judgement in transcendent, *a priori*, or any other non- or supernatural sources.[85] There are no immaterial ideas of the good, and no universal golden rules (whether proclaimed in sermons or dictated by a categorical imperative). Instead, the naturalist claims, ethics must be grounded in a strictly *empirical* dimension; ethical judgement of characters and actions spring from the natural, empirical world of the senses.[86]

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[82] This was one of the most radical arguments of Quine's extremely influential 1951 article, 'Two Dogmas of Empiricism'.

[83] Cf. De Caro & Macarthur, 'Introduction: The Nature of Naturalism', 3-6.

[84] For this formulation, see especially Kornblith, 'Naturalism'.

[85] For overviews, see James Lenmann, 'Moral Naturalism'; Nicholas Sturgeon, 'Ethical Naturalism'.

[86] Without going into further detail, it will suffice to mention that this type of meta-ethical position is found with contemporary neo-Aristotelian duty ethics (central contemporary exponents include Martha Nussbaum and Judith Jarvis Thomson), and in the school known as "Cornell realism", revolving around the works of Richard Boyd, David Brink, and Nicholas Sturgeon in particular. For examples, see Nussbaum, 'Aristotle on Human Nature and the Foundations of Ethics'; Thomson, *Goodness and Advice*; Boyd, 'Finite Beings, Finite Goods' (two parts); Brink, *Moral Realism and the Foundations of Ethics*;

The criticism has lingered that naturalism, considered as a whole, is a rather vague cluster of positions.[87] Despite the tendencies mentioned here, there is no single definition of naturalism in current use. Nevertheless, there have been some illustrative attempts to uncover the "common core" of naturalism in the form of a minimum requirement that all naturalisms must satisfy. For our present purposes, it is quite suggestive that the only agreement seems to be a rejection of *super*naturalism.[88] Simple though it may seem, this is a point that merits further attention. It is a point that connects the historical current of Victorian naturalism with the later philosophical currents, and provides us with an important framework for mapping the problem of disenchantment in the context of complex intellectual debates concerning the reach and limitations of natural knowledge.

NATURALISM VERSUS SUPERNATURALISM

It has been argued that, as far as debates about naturalism are concerned, '[w]hat is usually at issue is not whether to be "naturalistic" or not, but rather what is and what is not to be included in one's conception of "nature"'.[89] This is an important point, because even when it comes to the opposition to super-naturalism, it signals that a variety of stronger and weaker naturalistic approaches are possible. One man's supernatural may be another's nature. In fact, the central naturalistic thesis when opposed to supernaturalism seems to be that there can be no room for "divine" or "spiritual" *agency*, particularly in *explaining* and *accounting for things* in the world. The focus is on the presumed *causal* activity of "spiritual beings" rather than their mere existence. Spiritual beings outside of this world may or may not exist – even a naturalistic agnostic of Huxley's stature might admit that much. The problems only begin when one invokes the *activity* of spiritual entities and assign explanatory power to them.

Owen Flanagan has taken this line of definition a step further, and suggested that for supernaturalism to be really "objectionable" it has to adhere to all of the following three statements:

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[87] E.g. Barry Stroud, 'The Charm of Naturalism'; Lawrence Sklar, 'Naturalism and the Interpretation of Theories'; Hilary Putnam, 'The Content and Appeal of "Naturalism"'; Owen Flanagan, 'Varieties of Naturalism'.

[88] E.g. Stroud, 'The Charm of Naturalism', 44; Flanagan, 'Varieties of Naturalism', 432-433.

[89] Stroud, 'The Charm of Naturalism', 43.

(i) There exists a supernatural being or beings, or power(s) *outside* of the natural world;

(ii) These "beings" or "powers" have *causal commerce* with this world;

(iii) the grounds for belief in both the "supernatural being" and its causal activity cannot be seen, discovered, or inferred by way of any known and reliable epistemic methods.[90]

Since "objectionable supernaturalism" is the kind that accepts all three propositions, there is room for a number of more modest positions.[91] On this basis we can model the relation between naturalism and supernaturalism as a continuum with two extremes and several middle positions, rather than as a strict dichotomy.

By constructing a model on these grounds, some interesting nuances come to light (figure 3). The most objectionable point for a naturalist is the epistemological resignation implied in the third premise above. What is truly unacceptable to a naturalist is to claim the existence of supernatural entities that have causal intercourse with the natural world, while urging that this activity must be taken on the basis of plain fideism, without recourse to intersubjectively available evidence or reasoning. In other words: non/super-natural entities *may* in fact be used to explain things if their activity is conceived in such a way that it can be discovered and tested empirically.

[90] Extracted from Flanagan, 'Varieties of Naturalism', 433.

[91] Flanagan refers to such compromises as 'religious naturalism'. Ibid.

Naturalism – supernaturalism continuum

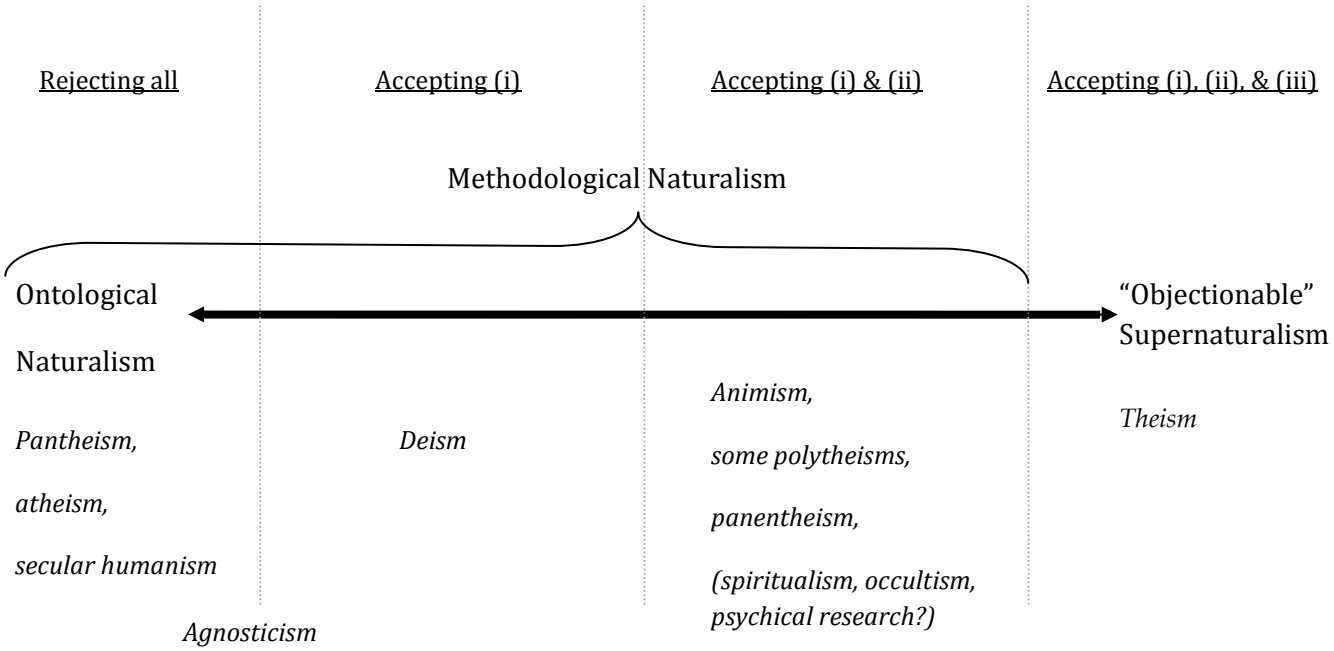


Figure 3: Some theological and religious positions on the naturalism-supernaturalism continuum. The model shows that whereas *ontological* naturalism requires the rejection of all the three criteria of supernaturalism, *methodological* naturalism allows points one and two in principle. It is possible to remain a deist, a panentheist, or even an animist, while remaining a methodological naturalist. The only thing excluded from the naturalistic spectrum altogether is the form of theism that requires faith alone.

Consider, for example, the efficacy of prayer: if a certain theological hypothesis allows for the measurement of effects of prayer, for example by running statistical studies on the influence of intercessory prayer on the healing process, the hypothesis is still within the naturalistic spectrum. The same would go for the testing of magical talismans for healing, or indeed any other ritual object, icon, or "fetish" assumed to have an actual effect on physical events. If it can be tested, it falls within the scope of *methodological* naturalism, and hence belongs to the naturalistic spectrum. If, however, the effect of prayer is claimed by theologians to be somehow *impossible* to test, for example because such tests are "blasphemous" or an impious exercise of putting 'the Lord Your God to the test' (Luke 4:12), then that hypothesis belongs to the supernaturalistic extreme of the spectrum, and is of the " objectionable" kind. Only then is it wholly incompatible with naturalism on any reading.

The above considerations mean that there is room for numerous forms of "religious naturalism" after objectionable supernaturalism has been eliminated. Pantheism in the tradition of Spinoza would, for example, be consistent with even the strongest naturalistic position, the rejection of (i), (ii), and (iii), and in this respect be ontologically indistinguishable from positions such as atheism and secular humanism. Furthermore, deists would be committed to the first proposition only, while rejecting the second (and thus automatically the third) with equal ferocity as any other naturalist. While deists take one step towards supernaturalism by claiming that there *is* a higher power outside of nature, they still have not reached the "objectionable form" since a non-interfering *deus absconditus* does not pose any problems for the autonomy of nature or the integrity of rational knowledge.

Moving further up the scale, it is possible to hold the second proposition, too, without abandoning the naturalistic project altogether. If one accepts (i) and (ii) and holds that the spiritual beings have causal commerce with this world, then the claim can be formulated as an empirical hypothesis that is still compatible with methodological naturalism. Linking the "supernatural" and the empirical world (or stressing the empirically available *qualities* or *consequences* of the supernatural), without the resignation of the human capacity for knowledge, opens up for theological positions where gods and spirits may be interacted with in this world. The appeal to empirical evidence could still legitimately be employed in defence of beliefs about such beings and their powers. The category would include theologies that emphasise divine immanence, such as varieties of polytheism, panentheism, and animism.[92]

I argue that this last category has historically been very attractive to certain men of science with religious cravings, especially from the late Victorian period onwards. It has given rise to what I propose to call an "open-ended naturalism". As we shall see in later chapters, an open-ended naturalism has been the epistemological starting point

[92] We should note that some possible semantic problems arise here if we take Flanagan's definition literally. Animists or even polytheists are not strictly speaking committed to anything "supernatural" in the sense of entities being *outside of* nature. In fact, here we seem better off looking back to Weber: if we forget for a moment the association of "supernaturalism" with "transcendence", what is at stake is rather the presence or non-presence of "mysterious incalculable forces" *within* nature. In other words, this category should include immanence. Harking back to Barry Stroud (*op. cit.*), the question is what to include in one's conception of "nature".

for psychical researchers, proponents of new natural theologies, and for many spiritualists and occultists as well.[93] However, the promise of "positive religion" has also left a flank wide open for scepticism. Holding that the healing power of spirits is in principle a rational and empirical matter is well and good, but what if, after repeated tests, the evidence simply fails to show? If the naturalistic game is played seriously, one has also committed oneself to accept verdicts of falsification. The interesting dilemmas created by this fact will occupy us at length in later chapters, and particularly in the context of psychical research and parapsychology.

Between Naturalisation and Disenchantment: Mapping the Blind Spot

With reference to the naturalism-supernaturalism continuum that I have presented above we are able to identify with more precision the blind spot of Weberian disenchantment that occupied us in chapter one.

As seen in figure 4 below, the disenchantment of the world would imply the rejection of that cluster of positions and attitudes that accept Flanagan's first and second proposition, while rejecting the third. These positions, which I have identified as being compatible with an "open-ended naturalism", presume that divine, spiritual, or magical agents are still at work within nature, and that traces of spiritual activity in the world can be uncovered, understood, and even manipulated by human agents through rational and empirical means. Indeed, by approaching the ostensibly "supernatural" with a methodological naturalism, members of this category have already rejected the intellectual sacrifice. Instead, they steadfastly push the limits of reason and evidence into the sphere of the religious.

[93] See especially chapters six to twelve.

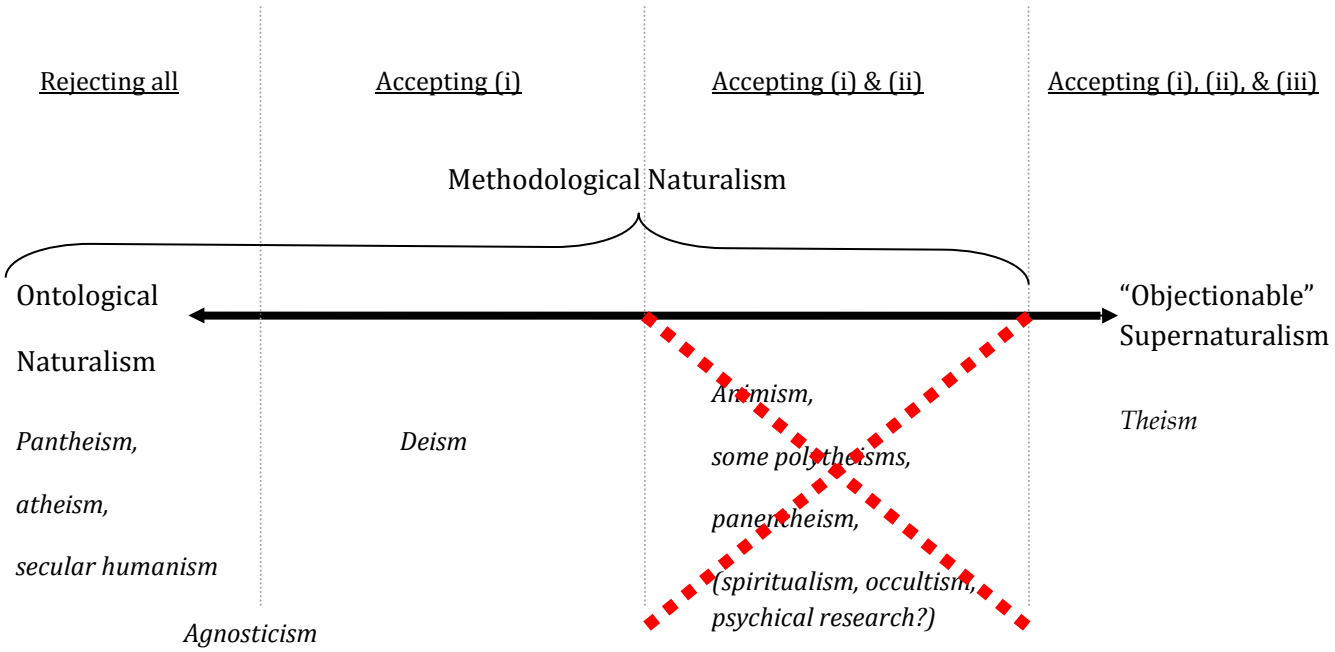


Figure 4: The blind spot of disenchantment projected on the naturalism-supernaturalism continuum.

This mapping underscores some interesting differences between disenchantment and naturalisation as two different epistemological conceptualisations of the relation between science and religion. Weberian disenchantment and scientific naturalists reject and accept different things. A naturalist rejects any causal powers outside of this world, *if* these are supposed to have no ways of being traced or understood by scientific methods. Weberian disenchantment, to the contrary, rejects any "supernatural" entities or forces at play within the empirical, natural world, dismissing the attempt to back up claims about such entities with empirical support as being illegitimate and deluded. This means that there is a conflict between disenchantment and the very principles of naturalism. This conflict is fundamental, and it concerns the "intellectual sacrifice". Forsaking reason and the pursuit of empirical support is the only way in which genuine religion can be achieved in the disenchanted view. Deism and theism are both viable, as long as they do not presume to meddle with scientific reasoning and argumentation. For the naturalist, everything hinges on respecting scientific principles. Undergoing the intellectual sacrifice means to disqualify oneself from the project altogether. Weberian disenchantment saves "pure religion" while disqualifying magic. Naturalism disqualifies "pure religion" as inconsequential at

best, and nonsensical at worst. It is in the middle of these tensions, I suggest, that the problem of disenchantment arises.

3 Disenchantment Revisited

I have suggested that the complexity of epistemological, theological, and metaphysical discussions on the outer boundaries of science in the early 20th century can better be grasped by focusing on the "problem of disenchantment". Before we can move on to actually apply this concept in analyses of historical material there is, however, one more question that must be dealt with seriously. When the Weberian disenchantment thesis and the re-enchantment paradigm have both been rejected as philosophically and theologically biased, it behoves us to reflect on the philosophical foundations of my own approach. This is necessary to avoid a self-defeating relativism, on the one hand, and the illusion of theory-independentness, on the other. Over the following few pages I shall make the case that a broadly naturalistic philosophy of science, wedded to a constructionist approach, is the best starting-point for the historian who wishes to understand the shifting relations between science and other discourses. The present section thus lays the final touches on my theoretical approach to the problem of disenchantment. In the conclusion, I will apply it in practice to answer the question that has been at the forefront throughout this chapter: how to interpret the relation between science and worldviews?

Towards a Critical Naturalistic Constructionism

With the hype of "post-positivism" now having lost the novelty it enjoyed some forty years ago,[94] and the bitter "science wars" having come to a cease fire,[95] there has in recent years been a proliferation of philosophical works on science that go in

[94] See especially Zammito, *A Nice Derangement of Epistemes* for a thorough historical and philosophical review of the many and consecutive revolts against logical-positivism, realism and the so-called "received view", starting with Quine, through Kuhn, Feyerabend, Lakatos, Laudan, etc., and on to the sociological programmes of people like Bloor, Barnes, Shapin, Collins, Pinch, Latour, Woolgar, etc.

[95] For constructive overviews of these epistemic clashes of the 1990s, see e.g. Phillip Kitcher, 'A Plea for Science Studies'. A retrospect was recently published by one of the main instigators and provocateurs of the "war" (on the side of the "realists"): Alan D. Sokal, *Beyond the Hoax*.

naturalistic and realist directions.[96] This means that dismissing the philosophical foundations of the original disenchantment thesis can easily be done without dismissing the possibility of building a robust philosophy of science, and without pressing a radical agenda of re-enchantment in the lines of Berman or Griffin. In fact, if one were to contest that the three dimensions of disenchantment – epistemic optimism, axiological scepticism, and metaphysical scepticism – provide a good picture of how modern science actually relates to the world and to other spheres of human interest, the call for "re-enchantment" appears meaningless in the first place. It emerges as a rushed response to a non-existing problem.

This said, it is not immediately clear that a philosophy of science would at all be needed by the kind of historical approach to questions about science and worldview that this book adopts. By comparison, historians of religions are not required to adopt a theology of their own in order to study the controversies between theologians – frankly, in the cases that they actually do adopt a theology, it would usually have been much better had they not. What is needed, however, is a theoretical foundation and a methodology capable of answering the types of questions which one's research is dedicated to asking. This is easy enough for the historian of theology, since one's theological position on god is unlikely to have any direct bearing on the historians' own methodological practice. It is, however, precisely here that the matter becomes more complicated for the historian who takes some of the fundamental epistemological debates of the academy as his subject matter. The very act of writing scholarly and

[96] In addition to the works cited in the naturalism chapter above, some recent major contributions to this rapidly growing literature include, e.g., Hilary Kornblith, *Knowledge and Its Place in Nature*; Penelope Maddy, *Second Philosophy*; Alexander Bird, *Nature's Metaphysics*; James Ladyman & Don Ross, *Every Thing Must Go*. In addition, many similar projects exist in e.g. new defences of scientific realism (Stathis Psillos, *Scientific Realism*), or in the burgeoning field of "embodied cognition", neurophenomenology, and similar body/brain/environment oriented approaches to mental functioning, perception, knowledge production, etc. See e.g. Shaun Gallagher, *How the Body Shapes the Mind*; Tyler Burge, *Origins of Objectivity*; Alva Noë, *Out of Our Heads*; Lawrence Shapiro, *Embodied Cognition*. In addition, one could cite earlier works by Francisco Varela, Evan Thomspon, Eleanor Rosch, and Antonio Damasio, as well as that of Paul and Patricia Churchland, exploring the relations between neurology, phenomenology, and the philosophy of mind, ultimately having implications for epistemology and the philosophy of science. For a serious attempt to introduce these approaches into research in the humanities, see Edward Slingerland, *What Science Offers the Humanities*.

methodically about the foundations of *other* academic practices implies taking a minimum stance on some of the discourses that are being discussed. A certain degree of recursivity is unavoidable. I seek to meet the challenges that this creates by developing a methodological stance that borrows significantly from naturalistic philosophy of science on the one hand, and constructionist methodologies in the social sciences on the other. These, I furthermore hold, are entirely compatible with some of the key elements of Weber's own methodology for social science, as mentioned in the previous chapter: namely the conceptualisation of history as *Problemgeschichte*, and a methodological individualism applied to questions of agency.[97]

* * *

In wishing to embed humanities research more firmly in a solid naturalistic framework and to halt some of the excesses of postmodern theorising, this project is only following a trend that has been gaining momentum in recent years.[98] The specific approach I propose might best be described as a *qualified, critical constructionism on naturalistic grounds*. It borrows from social constructionism the assumption that articulated worldviews and value systems, as cultural phenomena, are human constructs arising from the interplay of individual social actors.[99] Such construction takes place in myriads of ways, through multiple channels and by different means and mechanisms, depending on the construct in question. Value systems may for example be constructed in the socialisation of children, from parenting to education, in relation to broader worldviews presented and propagated through social and cultural institutions, from churches to schools to popular culture, which, again, relate to those yet more subtle and hard-to-catch "plausibility structures"[100] of a particular time and place – the basic cognitive, linguistic, and discursive space within which ideas and concepts can emerge, take shape, and be evaluated by individual actors. The space of plausibility is historically contingent

[97] Again, cf. Otto Gerhard Oexle (ed.), *Das Problem der Problemgeschichte*; Jon Elster, 'The Case for Methodological Individualism'.

[98] For a general work in this field, see e.g. Slingerland, *What Science Offers the Humanities*.

[99] E.g. Berger & Luckmann, *The Social Construction of Reality*; Berger, *The Sacred Canopy*.

[100] Cf. Berger, *The Sacred Canopy*, 45-51, 123-135.

and open to change over time; thus we should also recognise the relevance of Foucault's "historical *a priori*" and related concepts.[101]

This is, however, exactly the point where constructionism moves into philosophically problematic territory: if not only scientific concepts, but even such epistemic foundations as "rationality" and "objectivity" are historically contingent constructs, then what are we left with as a basis for knowing anything at all? The philosopher of science Ian Hacking provides good tools for meeting such challenges.[102] Historical "meta-epistemologists" do not *do* epistemology as such: they do not 'propose, advocate, or refute theories of knowledge'.[103] Instead, they 'study epistemological concepts as objects that evolve and mutate … the historical meta-epistemologist examines the trajectories of the objects that play certain roles in thinking about knowledge and belief'.[104] This does not *exclude* the possibility of epistemology, it merely emphasises its grounding in history and society.[105] The historical tracking of how certain epistemic possibilities arise and fade away may however inform the way one does epistemology, and not least the way that one judges standpoints of the past. One will, for example, be better able to explain the fortunes and failures of a certain knowledge-practice without falling victim to an anachronistic and present-centred judgment of those practices. Borrowing a point from the philosopher Phillip Kitcher, it is

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[101] Such as "historical epistemology" and "meta-epistemology", the former of which has been developed over the last few decades at the Max Planck Institute for the History of Science in Berlin. The latter was proposed in a response by Ian Hacking. My own approach is indebted to these schools in the history and philosophy of science. For major contributions, see Lorraine Daston & Peter Galison, *Objectivity*; Daston (ed.), *Biographies of Scientific Objects*; Mary Poovey, *A History of the Modern Fact*; Arnold Davidson, *Historical Epistemology and the Formation of Concepts*. Cf. Hacking, 'Historical Ontology', 9-14.

[102] See especially the critical but constructive treatment in Hacking, *The Social Construction of What?*, 1-35.

[103] Hacking, 'Historical Ontology', 9.

[104] Ibid.

[105] Ibid., 25. Hacking's own career clearly testifies to this point. Since the 1960s he has done fundamental work in the philosophy of statistics, probability theory, and statistical inference, and more recently he has involved himself in rethinking Aristotelian categories in light of contemporary cognitive science. For some of his major contributions to the history and philosophy of science, see Hacking, *The Logic of Statistical Inference*; idem, *The Emergence of Probability*; idem, *Representing and Intervening*; idem, *The Taming of Chance*; idem, *An Introduction to Probability and Inductive Logic*; cf. also his work on the history of psychology and psychiatry, e.g. Hacking, *Mad Travellers*; idem, *Rewriting the Soul*.

perfectly possible to honour the actors' categories even while making use of more recent categories when explaining them.[106]

The constructionism that informs my approach is, as mentioned, intended to be critical, qualified, and naturalistic. It is critical, because interested in analysing the strategies wielded by individual actors in the social construction of concepts, facts, theories, and worldviews. This involves a hermeneutic of suspicion, which probes beneath the surface of texts, narratives, and accounts of facts, to ask questions about interests, reasons, and social effects implied in specific speech-acts.[107] The approach I promote is, furthermore, *qualified* because it does not claim constructionism "all the way down". That is, it does not assume that social constructionism stands in a necessary opposition to "realism". As several commentators have pointed out during and after the "science wars", the slippery-slope from constructionism to relativism (as far as studies of science go) seems to have been a consequence of taking its epistemology much too seriously.[108] In Kitcher's words, an excessive emphasis on the epistemological consequences of constructionism has given rise to a 'dogmatic relativism', with key dogmas being that there is no truth save by social acceptance, that no system of belief is constrained by reason or reality, and that no system is epistemologically privileged.[109] By contrast to these dogmas, the constructionism informing my own argument does *not* deny nature and reason as "pre-discursive" elements constraining the production of knowledge and culture. It is in this sense that my position is *naturalistically grounded*. The radical constructionist appears to be committed to a *tabula rasa* view of human

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[106] Kitcher, 'A Plea for Science Studies', 38.

[107] Here I generally follow the prescriptions of Bruce Lincoln, 'Theses on Method'. However, my scope of analysis is not restricted to "religion", as was his, but also to certain discourses of science and philosophy. This does make the matter more complicated than it was in Lincoln's case, which is the reason for writing this section in the first place. The reference to "speech-acts" should be viewed in light of Quentin Skinner's methodological focus on the illocutionary and perlocutionary effects of historical texts, rather than the strict language philosophy of Austin (and Searle). For a discussion, see the essays in James Tully (ed.), *Meaning and Context*.

[108] For analyses along these lines, see especially John Zammito, *A Nice Derangement of Epistemes*, esp. 123-182; cf. Kitcher, 'A Plea for Science Studies', 38-44.

[109] Kitcher, 'A Plea for Science Studies', 38. These are the two out of "four dogmas" Kitcher identifies. The two others imply that there shall be no asymmetries in explanation of truth or falsehood, society or nature; and that honour must always be given to the "actor's categories".

cognition that it simply contradicted by the knowledge produced in fields such as cognitive science, psychology, linguistics, and neurology.[110] A more robust constructionism must be built on a naturalistic foundation in which biological and psychological constrains on human experience, cognition, communication, and representational practices are taken for granted.[111]

Furthermore, robust, naturalistic constructionists must make a serious effort to stay up to date on the systems of knowledge that are being constructed by their colleagues in other disciplines. An interdisciplinary imperative forces the scholar to seek out, to his or her best ability, the current state of knowledge in any other field or discipline that he or she overlaps with. This is a requirement of methodological naturalism that I propose to call the "endoxic principle".[112] While postmodern theorists of science have often followed the line of pragmatic naturalists such as Quine and Rorty and rejected the "correspondence theory of truth",[113] they seem just as often to forget the serious demands one has to meet when adopting an alternative *coherence theory*. It behoves the pragmatic naturalist to make sure that whatever he claims is in coherence with the best available knowledge in all other fields of knowledge – the scholars' "ethnos", to use Rorty's term.[114] This is, after all, how "truth" is evaluated once the representational theory is abandoned: it becomes a matter of finding one's rightful place in the broader "holistic" structure of human knowledge.

The naturalistic position that this project is based on thus assumes that all of human existence, activity, and experience is part of nature, and therefore ought to be

[110] See e.g. Steven Pinker, *The Blank Slate*.

[111] See e.g. Slingerland, *What Science Offers the Humanities*.

[112] The term is inspired by Aristotle's distinction between the common opinions of the people (*doxa*) and the argumentatively tested and durable "good opinions" of the wise (*endoxa*). The endoxic principle recognises that the scholar cannot be expected to personally master all the sciences that informs his or her own work. Instead, an effort must be made to listen to those who are presumed to have the most valued opinions in any field.

[113] For an example, see Kocku von Stuckrad, 'Discursive Study of Religion: From States of the Mind to Communication and Action', 257-258.

[114] This is the undeniable practical consequence of Quine's "semantic holism", but it also appears to be a feasible end result of Richard Rorty's "ethnocentrism". See especially Rorty,'Solidarity or Objectivity?'.

explained with reference to the totality of knowledge concerning nature.[115] On this view, social constructions emerge within the natural world, knowledge about which is already assumed through the many branches of science. Rather than explaining (away) "scientific knowledge", social constructions are themselves ultimately rooted in and explained by human nature.

CONCLUSION: THE CONSTRUCTION AND INVERSION OF A WORLDVIEW

In the course of the chapter we have noted some affinities concerning the notion of "scientific worldviews" and specific ideologies of science. It was the notion that a disenchanted scientific worldview had been imposed on unwilling and dissatisfied citizens that sparked the quixotic polemic against degenerate modern society found in

[115] This statement contains a rejection of so-called "methodological agnosticism", which has at times been a popular position in post-phenomenological history of religion. In his classic constructionist study of religion, *The Sacred Canopy*, Peter Berger insisted that 'every inquiry into religious matters that limits itself to the empirically available must necessarily be based on a "*methodological atheism*"' (p. 100, but cf. p. 180). To him, this meant that any and all 'metahuman explanations must be bracketed, put aside' (Berger, *The Heretical Imperative*, 36). Note that this "setting aside" is more than simply suspending belief: it means that any phenomenon ascribed religious meaning should be explained as far as it goes from the bottom up; that is, resting entirely on human, social, constructionist explanations. It was in critical discussion with Berger that Ninian Smart first introduced the notion of a "methodological agnosticism" in the study of religion in 1973 (Smart, *The Science of Religion and the Sociology of Knowledge*). For later attempts at revision in a softer, "agnostic" direction, see Douglas V. Porpora, 'Methodological Atheism, Methodological Agnosticism, and Religious Experience'. The methodological *naturalism* which is proposed here is closer to Berger's original formulations in that it simply sees any non-natural explanations that we may encounter on the emic level as irrelevant (except, of course, as data for interpretation and explanation). Furthermore, it means that any explanation which is not in accord with our best present knowledge of how the world works (i.e., what our colleagues in the relevant disciplines considers to be plausible), or which lacks any plausible support by such knowledge, is also automatically disqualified from the accounting of things. This methodological discussion is alive in contemporary science of religion: see especially the important recent volume on philosophy of science in the study of religion edited by Torben Hammersholt & Caroline Schaffalitzky (eds.), *At kortlægge religion*. The volume contains three articles which define a methodological naturalism, and attack the agnostic position on epistemological and methodological grounds. See Asbjørn Dyrendal & Olav Hammer, 'Hvad kan man vide om religion?'; Jesper Sørensen, 'Religionskritik og religionsvidenskab'; Hammersholt, 'Ninian Smarts mystikforskning som videnskabsteoretisk case'.

Morris Berman and David Ray Griffin. At the same time, however, we have seen a positive attempt to create and spread a worldview based on contemporary science among the Victorian naturalists. This worldview, moreover, has certain resemblances with notions of "disenchanted science". The methodological and theoretical reflections introduced above let us connect these observations in a coherent thesis about the *construction* and polemical *inversion* of worldviews.

As seen in the section on naturalism, the circle around Huxley, Tyndall, Spencer, et al., largely succeeded in constructing and launching a scientific worldview which appeared consistent, gained currency in influential circles of politics and culture, and became something of an official view of "what science dictates" on topics of broader societal relevance. Earlier, I talked about this event as the *ideological settlement* of Victorian scientific naturalism;[116] it amounted to a worldview that was proliferated through popular science, newspaper columns, public lectures, and increasingly through the reformed educational system. In this sense, new generations were socialised into the Victorian naturalist worldview.

This did not mean that everyone *accepted* that worldview, not even if we look among those who pursued academic careers.[117] It is for example notable that, with a few important exceptions, Victorian *physics* was a place where the naturalistic worldview was often met with some suspicion. The physicists' attitude typically came from a combination of philosophical, religious and strictly scientific reasons: the worldview promulgated by the naturalists tended to be based on understandings of physical concepts that physicists themselves considered outdated, inaccurate, or simply insufficient for supporting the naturalists' purposes. One of the most important examples concerned "materialism": the naturalists tended to follow definitions of matter that were rather contested in Victorian physics, including a Daltonian atomic theory that was already on its way out by the 1870s.[118] Nevertheless, the worldview itself did have a wider cultural impact, and by the beginning of the 20th century it existed pretty much as a "received view" of what science was up to, how it understood the world and human beings, and how it was related to questions of religious

[116] Luckhurst, *Invention of Telepathy*, 12; cf. Latour, *Pandora's Hope*, 310.

[117] This is the major thesis argued by Turner, *Between Science and Religion*.

[118] See my discussion of the modern conceptual revolutions in physics and chemistry in chapter four below.

significance.[119] Victorian naturalism was, in other words, a central intellectual backdrop against which early 20th-century debates about science and worldview took place.

At this point we should make a connection with the problem of disenchantment. There was a revolt against the Victorian view in the early decades of the new century, fuelled in part by new scientific discoveries, spearheaded by a younger generation that was no doubt trying to define itself contra the previous one. New scientific paradigms were often interpreted in ways which conformed with new and emerging ideologies of science, also presented in opposition to what the old Victorians were thought to have meant. These processes will occupy us in some detail as we discuss the fundamental debates in the special sciences in following chapters, and we should not rush on prematurely. We should, however, ask: what is the connection between the naturalistic worldview at 1900 and the notion of a disenchantment of the world, brought about by science?

We have seen what the Victorian naturalistic worldview implied, and it seems clear that, at least as far as its basic ontology and epistemology is concerned, Victorian naturalism corresponds nicely with the *epistemic* dimension of disenchantment. One of the major points brought up by the worldview's public defenders was indeed to get rid of any fantasies about immaterial agency and other obscurantist ideas about the way the world works, and to redefine the place of humanity within it. The project was built on an ambitious confidence that science would be able to conquer nature completely, leaving nothing unexplained. When we consider the axiological and metaphysical dimensions, however, things become much more ambiguous. Naturalism surely disavowed *speculative* metaphysics that lacked a firm grounding in science, but it was not afraid of tracing the metaphysical *implications* of scientific theories and hypotheses. In fact, such an endeavour must be seen as a necessary prerequisite for creating a coherent worldview in the first place. The possibility of developing an axiological discourse on the basis of natural science is even more clearly present in Victorian naturalism. Although allegations about "social Darwinism" have often taken the form of moral outrage against a barbaric form of *laissez-faire* egoism applied to society at large, or alternatively to the worship of the strong and fit at the expense of the weak,[120] this is

[119] See e.g. Peter Bowler, *Reconciling Science and Religion*, 14-24.

[120] This strongly coloured usage can be traced to Richard Hofstadter's 1944 book, *Social Darwinism in American Thought*. The book used the term to attack fascist ideology and currents the author considered

entirely a rhetorical invention of the mid-20th century that eclipses the fact that there were great differences between the various ways in which authors, philosophers, politicians and scientists attempted to make the various theories of evolution to bear on ethics and the ordering of society. Herbert Spencer's vision was indeed one of *laissez-faire* liberalism (although it is less clear how much support he drew from evolutionary thinking on this particular issue), while Huxley tended to emphasise the moral worth of nature itself, and of all living organisms, prefiguring the ecological discourse that would later become so popular among the re-enchantment theorists.[121] Furthermore, while Spencer's view emphasised free-market competition and a diminishing influence of the state, Huxley spent most his life trying to increase the state's functions, and improve them through the application of science. Huxley's lectures on evolution and ethics may be seen as a precursor to the biologically oriented type of naturalised ethics that is still a concern of professional philosophers today.[122]

In short, the naturalistic scientific worldview at the entry of the 20th century did claim to provide a foundation for ethics and a modest metaphysics, while it was fuelled by an epistemic optimism consistent with disenchantment. We should also remember that this worldview was constructed by a relatively limited number of public spokespersons for science (above all the nine members of the X-Club), and is hence no nebulous, structural, or repressive "system". Being built by a few individuals to serve their immediate ends and aspirations, Victorian naturalism in fact portrayed a somewhat simplified and, one has to say, overly coherent picture of what 19th century science was all about, a picture that many natural scientists did not in fact adhere to.[123] The importance of this observation is that the naturalists also created the basic framework for a *myth* of Victorian science, which would be turned on its head by later generations and made to form the foundation of narratives that saw science as a fully disenchanted, reductionist, materialist, and spiritually desolate force in the world. In

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to be crypto-fascist. Projecting this conception backwards on the Victorian naturalists would constitute a highly problematic anachronism. Cf. Thomas C. Leonard, 'Origins of the Myth of Social Darwinism'.

[121] See Michael Ruse, 'Introduction', xviii-xix.

[122] Thomas H. Huxley, *Evolution & Ethics*.

[123] On the scientific and academic reaction to scientific naturalism, see especially Turner, *Between Science and Religion*. For the debate in Victorian physics and theories of matter, see Asprem, 'Pondering Imponderables'.

other words, a construction originally made to serve the interests of the new scientific profession was inversed and projected anew from a standpoint of opposition.

As we shall see in later chapters, this is a central aspect of the dynamic involved in the creation of what I term "emic historiographies of science", attaching extra-scientific hopes of eschatological dimensions to certain early-20th century scientific advances. The re-enchantment advocates that we met at the beginning of this chapter were only a late addition to this tendency. In the chapters that lie ahead of us, we shall see that a number of emic historiographies and worldview implications of science were constructed in the decades between 1900 and the Second World War. Moreover, these were intricately interwoven with the creation of new scientific conceptual structures and the rise of new generations of researchers. Even when they were motivated by strictly scientific concerns, they could not escape the broader cultural contexts in which they practiced science, and were often led to address worldview questions against the backdrop of their immediate surroundings. In what follows, we shall move to the fundamental debates in the sciences of physics, chemistry, biology, and psychology during the turbulent decades of the early 20th century, charting a number of diverging contexts and a broad gallery of actors united by their attempts to make sense of the world while treading the outer limits of rational knowledge.

PART TWO

NATURAL THEOLOGY AND THE NEW SCIENCES

3

Brave New World:
An Introduction to Part Two

> [R]eligion first became possible for a reasonable scientific man about the year 1927.
>
> Arthur Eddington, *The Nature of the Physical World* (1928), p. 350.

The 20th century dawned with an extraordinarily productive phase in the history of science. An unprecedented number of discoveries were made in the period between 1890 and 1940; new theories were advanced and hypotheses tested, leading to radical changes in the scientific understanding of the composition and nature of matter, the development of life and organisms, the relation between mind and body, and the shape, size and history of the cosmos itself. Classical disciplines such as physics, chemistry, and biology were undergoing rapid developments in uncertain directions, developments which reverberated in the culture at large. Not only were the emerging fields of inquiry connected with new technologies that impacted on the lives and expectations of people, from the radio to the atomic bomb; they also excited the imagination and speculative faculties of philosophers, theologians, journals, authors of fiction, scientists, and the general reading public.

One result of the cultural interest in scientific changes was that entrenched perspectives on the supposed conflict between science and religion were destabilised.[1] It was becoming increasingly clear that the worldview of scientific naturalism, which, as we have seen, had been professed and preached by a coterie of educators, popularisers and professionalisers of science in the late-Victorian period, had been built on shaky foundations. The worldview of Victorian naturalism had been erected on three nineteenth century theories, namely classical thermodynamics, the Daltonian atomic

[1] The British context of this development has been thoroughly documented in Peter Bowler, *Reconciling Science and Religion*.

theory of matter, and (mostly Darwinian) evolutionary theory.[2] During the early decades of the 20th century, two out of three of these pillars were about to fall. The structure of the atom was redrawn by people such as J. J. Thomson, Ernest Rutherford, and Niels Bohr, and new conceptions of matter were hotly debated in scientific journals and conferences, as well as in the public sphere.[3] Meanwhile, the foundations of biology were opened up: vitalism and organicism were discussed in scientific circles in Europe, posing views on life, mind and the organism that questioned the mechanistic theories that had been popular among the scientific naturalists.[4] Darwinism was facing difficulties in the scientific discourse on evolution, to the extent that contemporary biologists characterised the period as an 'eclipse of Darwinism'.[5] Debates were raging about the precise mechanisms of evolutionary change and selection, and research in defence of the Lamarckian, teleological theory of evolution was published in peer-reviewed scientific journals as late as the 1920s.[6] It was only with the "Modern Synthesis" of evolutionary biology, genetics, and population statistics that a consistent form of Darwinism really settled – a process which culminated in the 1940s.[7] All in all, these decades saw the loosening up of established scientific and philosophical structures, resulting in an open engagement with the problem of disenchantment in scientific milieus.

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[2] Bernard Lightman, *The Origins of Agnosticism*, 28; cf. Frank Miller Turner, *Between Religion and Science*, 8-37.

[3] For the developments in physics, particularly the debates surrounding the concept of matter, see e.g. Helge Krag, *Quantum Generations*, 3-12, 44-57, 105-119; cf. Russell McCormmach, 'H.A. Lorentz and the Electromagnetic View of Nature'. See also Mark S. Morrisson, *Modern Alchemy*, 5-10, 97-134; Asprem, 'Pondering Imponderables'.

[4] See e.g. G. E. Allen, 'Mechanism, Vitalism and Organicism in Late Nineteenth and Twentieth-Century Biology'; cf. Anne Harrington, *Reenchanted Science*; Scott Gilbert & Sahorta Sarkar,'Embracing Complexity'; Heather Wolffram, 'Supernormal Biology'.

[5] Julian Huxley, *Evolution: The Modern Synthesis*, 22-28; cf. Bowler, *Evolution: The History of an Idea*, 233-265.

[6] For the scientific debates over evolution in the early 20th century, see especially Bowler, *The Eclipse of Darwinism*; idem, *Theories of Human Evolution*; a discussion of the American context is available in Pfeiffer, 'The genesis of American neo-Lamarckism'; also cf. Asprem, 'Nice Arrangement of Heterodoxies', 139-140.

[7] E.g. Julian Huxley, *Evolution: The Modern Synthesis* (1942); cf. Bowler, *Evolution*, 289-316.

While scientific milieus discussed new observations, experimental results, conceptual frameworks and their interpretations, visions of the brave new world of modern science were drawn up and disseminated to the rapidly growing reading public. The growth of science fiction literature in this period bears witness of a shift in the plausibility structures of the broader culture.[8] Already in 1914, following discoveries and experiments with radiation and nuclear transmutation, it was possible for H. G. Wells to imagine the consequences of nuclear war in *The World Set Free*. Meanwhile, pulp science fiction magazines published stories about the emergence of a modern transmutational alchemy – and about its possible catastrophic effect on a world economy regulated by the gold standard.[9] As Jeffrey Kripal has argue in a highly original recent work, science fiction became an important locus for modern mythology, often bridging the realms of science, magic, and myth in new and imaginative ways.[10] But while science fiction was generally produced by non-scientists, the growing literature of *popular* science was written for the most part by professional scientists of high stature.[11] This literature focused on amazing discoveries and possible technological applications, but it also touched frequently on science's implications for religion, philosophy, and worldview. Popularisation proved to be a powerful and important strategy for scientists to fight off rival theories and interpretations, and aimed to stimulate a greater public interest that might lead to the funding of new research. Popular science was not a sober representation of facts, but not simply a fantastic popular exaggeration without connection to actual research either – more than any of these, it took the shape of 'a battleground both for rival ideologies and rival worldviews', populated by scientists with differing viewpoints.[12]

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[8] See e.g. Mike Ashley, *The Time Machines*, for the development of science fiction in the context of pulp magazines from the 1920s to the 1950s. The roots of modern science fiction in Victorian discourses on science, technology, and popular belief are explored in Martin Willis, *Mesmerists, Monsters, and Machines*.

[9] Various utopian and dystopian views on atomic technology and a revived alchemy in the science fiction pulp literature of the 1920s and 1930s are explored in Morrisson, *Modern Alchemy*, 168-183. For early scientific work on radioactive transmutation, see Thaddeus Trenn, *The Self-Splitting Atom*. See also Richard E. Sclove, 'From Alchemy to Atomic War'.

[10] Kripal, *Mutants & Mystics: Science Fiction, Superhero Comics, and the Paranormal*; cf. idem, *Authors of the Impossible*.

[11] See Bowler, *Science for All*.

[12] Ibid., 24.

The question of how science was related to religion figured sometimes quite prominently in popular-scientific battles over worldviews.[13] While the popularisers of the 19th century had focused on making a sharp distinction between science and religion, emphasising the epistemic superiority of the former over the latter, the debates of the new century is riddled with spokespersons attempting to connect the two. As has been argued by historian of science Peter J. Bowler, a "new natural theology" emerged out of such discussions in Britain, created and disseminated by a mix of scientists, philosophers and clergymen through media such as popular lectures, articles and books intended for a broader public.[14] Prior to the professionalization of the sciences in the 19th century, natural theology had been a branch of natural philosophy, and a rather significant one at that. It was only with the professionalization and institutionalisation of the natural sciences, and the accompanying public campaigns of the new naturalists that a clear separation of, and antagonism between, science and religion was put in place, as an important phase of boundary-work on behalf of the emerging profession.[15] What we see in the early 20th century is the attempt by philosophically minded scientists and popularisers to reinvent the religious ambition of natural philosophy in the context of a new and unsettled scientific discourse on nature.

The following chapters examine the connections between conceptual developments in the natural sciences, struggles with the problem of disenchantment, and the invention of new natural theologies. The chapters engage critically with Peter Bowler's work on the relation between science and religion in the early 20th century.

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[13] See ibid., 23-4; cf. idem, *Reconciling Science and Religion*, passim.

[14] In a broad sense, "natural theology" is understood as arguments regarding deity and its relation to humanity and the world that spring from the empirical study of nature, on a basis of rational thought. This undertaking can be seen as a *longue durée* in Western intellectual history, stretching back to antiquity; in the Christian theological tradition we recognise it, for example, in the teleological arguments for the existence of God, as formalised by Thomas Aquinas. In a more restricted sense, natural theology may refer to certain theological arguments advanced during the Enlightenment period, connected with the rise of deism in England and France, and the concept of "natural religion", independent of revelation and grounded solely in reason and ordinary experience. Classic examples and discussions of the latter include David Hume's 'Dialogues concerning Natural Religion' (1779), Thomas Paine's *The Age of Reason* (1794-1807), and, above all, William Paley's *Natural Theology* (1802).

[15] See Thomas Gieryn, 'Boundary-Work and the Demarcation of Science from Non-Science'; idem, *Cultural Boundaries of Science*.

The central objective of this engagement is to show how framing some of the central debates about science in the context of struggles with the problem of disenchantment can help us extend, corroborate, and supplement Bowler's analysis. For Bowler, "religion" really refers to "Christianity", and the new natural theology is portrayed as essentially a liberal Christian reform movement. Challenging this reading, I will suggest that the new speculations on nature and religion also drew upon resources and strategies from the broader historical reservoir of "esotericism".[16] In fact, I shall argue that some of the "liberal Christian" theologies postulated in this context made use of natural-theological arguments that were essentially *heretical* or at the very least deeply *heterodox* when viewed against the canon of mainline Christian theology. Emphasising the many conceptual shifts in the special sciences of the first four decades of the 20th century, and the *multiplicity* of theoretical frameworks built on them, I find that the plural "new natural theolog*ies*" is more appropriate than Bowler's singular. I suggest that one can sensibly differentiate between five different schools of natural theology during this period, arising from the engagement with different scientific fields. These points are explored in chapter six, which besides introducing, describing and discussing the five schools of new natural theologies and the institutional spaces in which they were produced culminates in a full discussion of their theological foundation.

Before we get there, however, chapters four and five chart out the connections between *actual* scientific work and the *worldview implications* drawn from them. My main argument is that the new natural theologies were created out of perceived solutions to the problem of disenchantment. While the solutions certainly differed, they all amounted to a rejection of the intellectual sacrifice.

British scientists and popularisers seem to have been more willing than their colleagues in other countries to be explicit about the possible religious implications of their work. This willingness was even accommodated by institutional platforms where such ideas could be expressed and disseminated. Besides respected intellectual journals discussing such issues, notably *The Hibbert Journal* (1902–1968), there were societies and lecture platforms that provided institutional spaces hospitable to new natural theologies. In chapter six I will discuss three of these platforms in some detail. The most significant and deeply influential of them is the Gifford Lectures in Natural Theology,

[16] Cf. Hanegraaff, *Esotericism and the Academy*, 153-256.

which deserve a brief introduction already at this stage, since it will figure in the following discussion of developments in the scientific disciplines.

The result of a considerable private financial endowment, the Gifford Lectures have been held in Scottish universities since 1888 to the present day.[17] Looking at the lectures given by prominent scientists, philosophers, and scholars in this institutional framework, we are presented not merely with a mirror of major trends in the construction of new natural theologies: since many of the lectures were turned into successful publications in their own right, we also localise an important *site of production* for ideas that have since been highly influential in the "religion-science debate". In fact, the Gifford Lectures continue to be one of the central forums for this apparently never-exhausted debate. It is for example instructive that one of the classic textbooks of the interdisciplinary academic "field" of "religion and science",[18] Ian Barbour's *Religion and Science: Historical and Contemporary Issues* (1997), itself started off as Gifford lectures in 1989-1990. Other historical works on the religion-science debate have come out of the same platform in recent decades, notably John Brooke and Geoffrey Cantor's important *Reconstructing Nature: The Engagement of Science and Religion* (1998). In general, but particularly in the period that concerns us here, the Gifford Lectures have had a broad outreach beyond the scientific disciplines from which the particular lecturer and author was writing, and have hence been influential in popularising certain views of science to an educated readership of non-specialists. This is very significant for understanding the public perception of science, and the origin of popular notions that modern science is somehow vindicating a spiritual dimension of reality.

The emphasis on Britain when it comes to popularisation and extrapolations from science to natural theology should not occlude the fact that many deeply significant intellectual developments first took shape on the Continent, particularly in Germany and France. In fact, it does not seem coincidental that some of the major revolutionary conceptual developments in physics took place in the German cultural

[17] See the Gifford Lectures' website: http://www.giffordlectures.org/ (accessed 10.11.2010). For historical overviews, see Stanley Jaki, *Lord Gifford and his Lectures*; Larry Witham, *The Measure of God*.

[18] For a criticism of the claim that "religion and science" in any meaningful way constitutes an autonomous academic "field", see the excellent review article of the *Oxford Handbook of Religion and Science* (2006), David Knight, 'Religion and Science: A Field of Study?'.

sphere. In the next chapter I will argue that some of the basic philosophical and religious implications extracted from the new sciences are best understood in light of the cultural context of the Weimar era.[19] Moving on to consider some of the major conceptual issues involved in the drastic changes across the spectrum of scientific fields in the early 20th century, I will consider additional relevant contexts and engage in an extensive review and synthesis of previous scholarship in the history of science. The "Forman thesis" in the history of quantum physics is of particular interest to our concerns, and will be developed further in the service of providing an account of the relevant developments in physics and the cultural significance they were given. Thus, the main focus in chapter four is on debates concerning causality and determinism in physics and chemistry, obviously connected to the epistemological dimension of disenchantment as discussed previously, and, as I will argue, to the very cultural context in which Weber formulated the disenchantment thesis in the first place. In the sciences of life and mind, which will occupy us in chapter five, we will particularly pay attention to the interrelated debates about vitalism, organicism, evolution, and the mind-body problem. These debates can all be related through the problem of disenchantment – especially in the form of the relation between mechanistic materialism on the one hand, and teleology on the other. This was a deep philosophical conflict that cut across the fields of biology and psychology in the early 20th century, with obvious implications for the understanding of human life and experience.

Together, the chapters of Part Two aim to give a comprehensive overview of the core conceptual issues and disciplinary formations in the natural sciences in the period between 1900 and 1939. There is a clear focus on conceptual *controversies*, particularly controversies that relate to the problem of disenchantment in one way or another. In the final chapter, we will see how such conceptual issues were linked with the attempt to craft new natural theologies, which sometimes influenced further scientific developments. This, I will argue, was particularly the case in some of the discussions surrounding biology and psychology, where the concept of "emergence" became

[19] Cf. Paul Forman, 'Weimar culture, causality, and quantum theory'; idem, 'Reception of an Acausal Quantum Mechanics in Germany and Britain'; idem, '*Kausalität*, *Anschaullichkeit*, and *Individualität*, or How Cultural Values Prescribed the Character and Lessons Ascribed to Quantum Mechanics'. See my discussion of Paul Forman's thought provoking account of the conceptual developments in quantum mechanics in the following chapter.

important as a philosophical support for organicist and holistic models in the 1920s. The concept was, however, first introduced in the framework of highly elaborate natural theologies, formed precisely in order to allow for new theological positions in science.[20] These interlinked discussions provide a bridge to Part Three, where we shall look closely at the development of psychical research and parapsychology in the early 20th century.

[20] The two major authors here are the philosopher Samuel Alexander, *Space, Time, and Deity*, two volumes, and the psychologist and zoologist Conwy Lloyd Morgan, *Emergent Evolution*, two volumes. Both these works were the outcome of Gifford Lectures in natural theology. More on this in chapter six.

4

Physical Science in a Modern Mode

> [T]he history of physical science in the twentieth century is one of a progressive emancipation from the purely human angle of vision.
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> James Hopwood Jeans, *The New Background of Science* (1933), 5.

INTRODUCTION

The present chapter serves several interrelated purposes. It surveys central developments in the history of the physical sciences (i.e. physics and chemistry) in the period from 1900 to the beginning of World War II in order to provide a solid background reference for the rest of the book. The developments that concern us the most fall into three main streams: relativity theory, quantum mechanics, and research on radioactivity. All three fields involve distinctly new conceptual developments, achieving enormous attention and sparking much speculation *outside* of the physical sciences, addressing broader issues than strictly scientific ones. The primary motivation for providing a relatively comprehensive yet concise historical overview of these scientific developments is the recognition that much history of religion dealing with the impact of science on religious innovation tends to be rather superficial in its engagement with the history of science. Thus a number of stereotypes, projections, and emic historiographies of science have tended to be reproduced uncritically, while at other times, the lack of a critical interrogation of science itself has left many interesting research questions unanswered. Breaking this problematic trend and putting the analysis of modern science's interaction with processes of religious meaning-making on a solid historical basis, the chapter will give a nuanced picture of the problem of disenchantment in the physical sciences in the early 20th century. In combination with the following chapter, focusing on the life and mind sciences, it presents the scientific "basis" for speculative "superstructures" concerning worldviews and new natural theologies. Those superstructures shall occupy us as length in chapter six, but in order to fully assess their relation to scientific developments, and to differentiate between

strategic mythmaking and actual scientific practice, it is essential to first establish a close dialogue with the history of modern science.

To illustrate the need for a closer engagement with the history of science I will begin by looking briefly at three major works in the history of religion that could all have benefitted from it. The first of these is Catherine Albanese's *Republic of Mind and Spirit* (2007), a ground-breaking work on what the author calls American "metaphysical religion". In introducing, very briefly, the emergence and importance of quantum mechanics, Albanese bases her narrative of scientific developments largely on "New Age" classics such as Gary Zukav's *The Dancing Wu-Li Masters* and Fritjof Capra's *Tao of Physics*, adding primary material from Werner Heisenberg's later popularising and speculative work.[1] The result is that we are presented with a history of science narrative that has *already* been filtered and interpreted through the lens of those who have later made rhetorical use of it. The *production* of this narrative remains unquestioned. We learn nothing about the *actual* relationship between the religious developments in question and the scientific developments they build on, make use of, or respond to, since we are only confronted with the final product. We only get to see the scientific developments through the eyes of the religious entrepreneur. Clearly, this would never be acceptable if the claims were about other parts of history (e.g. claims of tradition, hagiographies), and it should not be accepted for claims about the history of science either.

Olav Hammer's *Claiming Knowledge* illustrates a quite different problem related to the neglect of engaging with the history of modern science. Hammer's otherwise excellent analysis of the strategic uses of science by esoteric spokespersons in the modern period is built on a helpful definition of "scientism", as distinguished from actual science.[2] One problem with this definition is that it takes the thoroughly "cooked" claims of science for granted, without interrogating the process of scientific knowledge production itself. In other words, it offers a somewhat simplistic dichotomy between "proper science" and (non- or extra-scientific) "scientism", which bars the kind of questions that occupy us here.

Finally, Wouter Hanegraaff's *New Age Religion and Western Culture* opted for the methodological choice of staying away from any direct comparison with actual scientific

[1] Albanese, *Republic of Mind and Spirit*, 397-399, 582 n. 9-10.

[2] Hammer, *Claiming Knowledge*, 206.

production when discussing works of "New Age science".[3] Thus, what I propose to call "emic historiographies of science" are taken at face value, although no claim is made that these represent scientific or historical realities. Distinctions between "holism" and "reductionism"/"materialism"/"mechanism" are identified on the emic level, and can be analysed to say something about the worldviews of the New Age spokespersons making them, and their conception of history.[4] While this is an understandable limitation from a methodological point of view, it still precludes the type of critical research questions which interest us here. Furthermore, there is a danger that distinctions found on the emic level may be subtly reproduced in etic discourse as well. For example, the reliance on terms such as 'the new scientific worldview',[5] which Hanegraaff connected to the notion of a *disenchanted* worldview, suggests such leakage, especially as long as disenchantment is connected with 'the increasing prestige of modern science and the positivist-materialist philosophies which flourished in its wake'.[6] One of the aims of this study is precisely to deconstruct this monolithic and somewhat polemical view of modern science.

Labels such as "positivist", "materialist", "reductionist", and "mechanist" do not function as clear-cut analytical concepts; they are historically imprecise and polemically loaded terms, implying certain things about the identity of "science". Using them uncritically easily reproduces polemical distinctions created in part by scientists, and in part by those wishing to argue for "re-enchantment". A major contribution of the present chapter is to look at the production of emic historiographies of the physical sciences *within* communities of scientists, and paying critical attention to the conceptual shifts and historical complexities involved. An indispensable tool for understanding this development is found in the historical thesis on the birth of quantum mechanics formulated by Paul Forman. Introducing and discussing this thesis at some length in the final parts of the chapter, I will show that it has important implications for our understanding of the problem of disenchantment, and the ways in which it was met in the natural sciences of the inter-war period. Finally, I argue that an analysis combining the Forman thesis with my revised model of disenchantment helps us reframe and

[3] Hanegraaff, *New Age Religion*, 129.

[4] E.g. ibid., 119.

[5] E.g. ibid., 462.

[6] Ibid., 421.

better understand the early development of new *esoteric* discourses. In chapter six we shall see that some of these have informed the production of new natural theologies that have since become highly influential in post-war religious and esoteric discourse. The main argument advanced in the present chapter is that they were borne from engagements with the problem of disenchantment inside of dominant scientific discourses of the early 20th century.

1 Science and Memory: A Historiographical Preamble

The distinction between "classical" and "modern" physics has been a standard element in historical narratives of the physical sciences since the early 20th century. According to these narratives, the classical period was the culmination of the "scientific revolution", the outcome of the works of such men as Copernicus, Galileo, Kepler, Newton, and Descartes. More than simply a set of scientific theories and explanations of observational data, classical physics rested on a certain worldview, the "classical worldview", which was based on notions of absolute space and absolute time, and on mechanistic interactions between objects in a closed universe that was essentially deterministic. According to this conventional narrative, the classical worldview peaked at the end of the 19th century, when a new coterie of pioneers made new discoveries that ultimately would give rise to the "*modern* worldview". The heroes of this worldview were the likes of Planck, Einstein, Rutherford, Bohr, Heisenberg, Pauli and Schrödinger. In stark contrast with the classical, the modern worldview taught the relativity of space and time, and saw forces play out in a fundamentally indeterminate universe governed largely by statistical laws of chance.

The distinction between classical and modern is supposed to reflect a quite sudden and drastic conceptual switch in physics, with further implications for the "scientific worldview". While there obviously were such significant conceptual developments, as well as changes in the way scientists conceived of the implications of their theories, recent scholarship in the history of science has pointed to how dichotomies of this type have also obfuscated the nuances of how science actually developed at the *fin-de-siècle*.[7] We must not miss the fact that scientists of the "modern"

[7] The journal *Studies in History and Philosophy and Science* published a thematic issue on 'science and the changing senses of reality circa 1900' in 2008, in which several articles question common assumptions

period have made strategic use of their own history to create a narrative of revolution in which they themselves were inscribed as the avant-garde. Richard Staley has argued that 'classical and modern physics were importantly co-created, fashioned in the same period, with the former ultimately defined by the adherents of the new physics'.[8] "Classical" is a category applied retrospectively. While this may in itself be trivial, it is of more importance to emphasise that the very act of defining the old and distinguishing the "modern" was part of a strategy to break away from what was conceived as "traditional" forms of thinking about science, and hence to revise the cultural *identity* of science. There is a clear link here to the classical/modern distinction in art, literature, and music – the breaking up of established forms, the shattering of tradition, and the loss of harmony and clear vision have all been thought to characterise the modern aesthetic.[9]

The distinction between the classical and the modern in physics seems first to have taken hold following the 1911 Solvay congress in Brussels, where eighteen specially invited physicists from Germany, France, Austria, the Netherlands, Britain and Denmark met to discuss the current problems in the emerging quantum theory.[10] In his novel interpretation of the conference, Staley suggests that the most significant outcome of this conference was precisely that a new historical awareness was crafted, which would define the new generation of physicists.[11] What was at stake was the creation of a

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about the classical/modern distinction. See especially Richard Staley, 'Worldviews and Physicists' Experience of Disciplinary Change'; Richard Noakes, 'The "World of the Infinitely Little"'; cf. H. Otto Sibum, 'Introduction: Science and the Changing Senses of Reality Circa 1900'.

[8] Staley, '"Worldviews and Physicists' Experience of Disciplinary Change', 306; cf. idem, 'On the Co-creation of Classical and Modern Physics'; idem, *Einstein's Generation*.

[9] Staley, '"Worldviews and Physicists' Experience of Disciplinary Change', 299-306. For an interesting view of the overlaps between science and art in this respect, see the essays in James Elkins (ed.), *Six Stories from the End of Representation*.

[10] Staley, 'On the Co-creation of Classical and Modern Physics', 553-558; cf. idem, *Einstein's Generation*, 15, 397-421.

[11] Staley, 'On the Co-creation of Classical and Modern Physics', 554. Staley may, however, be overemphasising this point when he states that 'the congress saw no substantially new contributions to the research literature'. This seems to have become a standard phrase following Einstein's pessimistic remark after the conference that 'nothing positive came out' of it. However, the conference saw important discussions of and contributions to fields such as Brownian motion and specific heats, to which Einstein's own paper contributed. These, it must be said, represented a real conceptual break from older physics

"disciplinary memory", which gave value to "new knowledge" placed partially in contradistinction to a rearrangement and homogenisation of the old, a process that reinforced the "disciplinary identity" of what came increasingly to be seen as a new type of physics after the Great War.[12]

The above remarks are of analytical importance. First of all, they bring attention to the fact that the construction of tradition plays a role in identity formation in the sciences, as it does in other socio-cultural systems.[13] It furthermore reminds us that it is not only religious and esoteric appropriations of the sciences that are engaged in the creation of "emic historiographies of science" – we must also pay attention to the role of the scientists themselves in creating such narratives.[14] Strategic uses of the history of science are part of the rhetorical arsenal of disciplinary formation and identity-construction. Becoming aware of the retrospective creation of the classical/modern divide, we can start looking at its reception history, both within and outside of physics. Attention must be given to the new significances the distinction is invested with in light of extra-scientific agendas. This furthermore emphasises the need of a broader cultural analysis when looking at the significance attributed to certain developments that may at

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research, and not only a rhetorical exercise of distancing from earlier generations. On the papers presented at the conference, see Norbert Straumann, 'On the First Solvay Congress in 1911'; cf. Galison, 'Solvay Redivivus'.

[12] The relation between the three concepts "new knowledge", "disciplinary memory", and "disciplinary identity" are central to the narrative presented in Staley, *Einstein's Generation*. See especially pp. 13-16.

[13] For "the invention of tradition" as a critical concept in historiographical research, see Eric Hobsbawm & Terence Ranger (eds.), *Invention of Tradition*. Cf. the classic study by Shils, *Tradition*.

[14] On the distinction between emic and etic historiography, see Hammer, *Claiming Knowledge*, 85-89: 'Following the common usage of the terms *emic* and *etic* in anthropological literature to distinguish the informants' views from those of the researchers, secular studies can be described as etic, whereas the accounts of believers constitute emic historiography' (ibid., 86). Whereas the secular/believer distinction is problematic and does not work properly in this context, the division between insider and outsider accounts still remains. Etic historiography might more conveniently be given the pragmatic definition of the historiography which is written by professional historians in any given field, and which would, at any given time, resonate with the views accepted in peer reviewed journals in that field. By contrast, emic historiographies are meaningful in light of discourse-internal assumptions, but are not necessarily corroborated by up-to-date academic historiography. Note how this definition resonates with my naturalistic constructionism laid out in chapter three, a position which rests on a pragmatic, "endoxic" appeal to what our best current scholarship has to say on any given matter.

first seem purely "internal" to science. A certain discovery is not revolutionary in and of itself; it has to be recognised as such by someone for a reason. These reasons may at least in part lie outside of "pure science", and hence call for a mild sort of "externalism" about scientific development.

The precise role of extra-scientific influences on scientific developments in the early 20th century, and the construction of "revolutionary" science, has sparked much debate in the historical literature. Later in this chapter I will discuss one such perspective at some length, namely the Forman thesis on the development of quantum mechanics.[15] Before getting to that, however, we need to have a more straight-forward factual overview of central scientific developments of the period. I will focus on three major developments which would go on to have a deep intellectual impact beyond scientific communities: the relativity theories, quantum mechanics, and the science of radioactivity.

2 Relativities: A Straight Story

Relativities I: The Special Theory, and Some Precursors

The relativity theories in physics are primarily associated with the iconic figure of Albert Einstein (1879–1955). In the conventional story, Einstein's 1905 paper 'On the Electrodynamics of Moving Bodies' introduced the special theory of relativity (STR). The general theory (GTR) completed the relativistic programme in physics ten years later, when it was presented as a paper before the Berlin Academy of Sciences in November 1915.[16] Together these papers sparked a revolution in physics and cosmology, giving rise to a fresh view of the world and a new way of perceiving physical phenomena.

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[15] E.g. Forman, 'Weimar culture, causality, and quantum theory'; idem, 'Reception of an Acausal Quantum Mechanics in Germany and Britain'; idem, '*Kausalität*, *Anschaulichkeit*, and *Individualität*, or How Cultural Values Prescribed the Character and Lessons Ascribed to Quantum Mechanics'; Stephen Brush, 'The Chimerical Cat'; John Hendry, 'Weimar Culture and Quantum Causality'; J. L. Heilbron, 'Earliest Missionaries of the Copenhagen Spirit'; Helge Kragh, *Quantum Generations*, 151-154.

[16] The original 1905 paper was entitled 'Zur Elektrodynamik bewegter Körper' and published in *Annalen der Physik.* All the central papers on SPR and GTR are collected with explanation and introduction in Lorentz, Einstein, Minkowski, and Weyl, *The Principle of Relativity* (originally published in 1923). There has been a long priority dispute regarding both STR and GTR, some aspects of which will be addressed below. For a useful and constructive comparison between the early relativity theories of Einstein and

However, emphasising the place of Einstein means obscuring the gradual development of the ideas from which the relativity theories emerged. Some of the main lines of inquiry could at least be stretched back to 19th century optics' interest in the relative motions of the speed of light, moving bodies, and a stationary ether. The famous Michelson-Morley experiment, first conducted in 1887, is a particularly obvious case in point, especially since it was later conscripted as evidence for relativity.[17] The popular view that the Michaelson-Morley experiment was the end of ether physics, ushering in the age of relativity, is, however, erroneous and a good example of a strategic reinterpretation of earlier physics to serve presentist goals.[18] The experiment had originally been designed to distinguish between different *types* of ether theories, and its famous null-result, although puzzling and unexpected, was still capable of being incorporated into the conceptual framework of 19th century ether theory.[19]

Despite appearing less "revolutionary" when viewed in the context of its historical precursors, it is undeniable that Einstein's 1905 paper had several unique and innovative aspects to it. While he did know about the Michelson-Morley experiments and concurrent debates, he did not make an explicit connection between these and his

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Poincaré, see Peter Galison, *Einstein's Clocks, Poincaré's Maps*. An authoritative historical account of Einstein's development of SPR can be found in John Stachel, ' "What Song the Syrens Sang": How Did Einstein Discover Special Relativity?'. For the GTR, see Stachel, 'How Einstein Discovered General Relativity'. For the relation of relativity to earlier (and competing) notions of time and space, cf. J. B. Kennedy, *Space, Time, and Einstein*. A concise but meticulous historical overview is available in Kragh, *Quantum Generations*, 87-104.

[17] The relation between relativity theory and the Michelson-Morley experiment with its many variations and repetitions up until the 1930s is discussed in great detail in Lloyd S. Swenson, *The Ethereal Aether*.

[18] See ibid., 188-189.

[19] The experiment was set up by American physicists Albert Michelson (1852–1931) and Edward W. Morley (1838–1923), and looked for speed differences between beams of light moving in opposing directions relative to the earth's movement. This made it possible to test a prediction of the stationary ether model, championed by August-Jean Fresnel, which predicted an "ether wind" effect influencing measurements of the speed of light made on bodies moving through the ether (e.g., the Earth itself). The main competitor to this model was George Gabriel Stokes's movable ether, which hypothesised that heavy objects would drag the ether with it. Instead of "disproving" the ether, the null result of the Michaelson-Morley was consistent with Stokes's hypothesis of an "ether drag" effect: the speed of light would appear uniform on a moving earth, because the planet dragged the ether with it. For a discussion of these theories and the relation to the experiments, see Edmund Taylor Whittaker, *A History of the Theories of Aether and Electricity*, 137-87, 411-7; cf. Swenson, *The Ethereal Aether*, 3-31.

principle of special relativity, which did, however, explain the experiment's null-result. The manner through which Einstein developed his theory is in itself striking: it relied heavily on thought-experiments rather than actually performed experiments, and was radically deductive in character. It started by reflecting on certain "asymmetries" arising from Maxwellian electrodynamics, before proposing two postulates that would give a simple and coherent account of the electrodynamics of moving bodies. The two famous postulates were 1) *the principle of relativity*, stating that the laws of electrodynamics and optics are the same for all inertial frames of reference, while abolishing the notion of a privileged, absolute frame of reference; and 2) that *light in empty space travels at a constant velocity* independent of the state of motion of the body emitting it.[20] From these two postulates Einstein was able to derive a number of strange and counterintuitive notions, such as length contraction, time dilation, and the relativity of simultaneity.

Again, these effects and postulates were not entirely new. The French mathematician and physicist Henri Poincaré had postulated the constant velocity of light already in 1898, developed a notion of relativity of observation to inertial frames in 1904, and published a mathematical exposition and restating of his relativity principle as a general law of nature in the summer of 1905, just a few months before Einstein's paper was published.[21] Indeed, Poincaré seems to have considered Einstein's special theory rather trivial.[22] In 1889 George FitzGerald had been the first to introduce a hypothesis of length contraction, in what was at the time a completely speculative and rather *ad hoc* explanation of the Michelson-Morley experiment.[23] A contraction effect was similarly postulated by Lorentz, who also worked out the mathematics of it. But whereas Lorentz and FitzGerald had been working to solve an experimental puzzle which did not make sense according to present theories, Einstein came to the same conclusions through a radically deductive approach from the two postulates introduced in the beginning of his paper. Furthermore, Einstein's conclusions concerned *measurement* rather than the real properties of objects. Since Lorentz and FitzGerald operated with a notion of absolute time and space, defined in relation to a stationary

[20] Einstein, 'On the Electrodynamics of Moving Bodies', 37-38.

[21] Kragh, *Quantum Generations*, 89-90.

[22] Goldberg, 'In Defense of Ether', 96-97. Cf. Kragh, *Quantum Generations*, 87-90.

[23] An account of FitzGerald's proposal and its reception is given in Hunt, *The Maxwellians*, 192-197.

and uniform ether, contraction for them had to be understood as a change in the real physical properties of bodies in motion: moving bodies really did become shorter.[24] In Einstein's STR the phenomenon is explained rather as a product of measurements conducted in states of *relative* motion. By applying the same logic to measurements of time, an effect of "time dilation" was predicted: measurements of time vary between different reference frames moving at different velocities relative to each other. This, in turn, gave rise to the counterintuitive notion that *simultaneity* is relative: two spatially separate events cannot be *absolutely* simultaneous. Instead, the sequence of two events will vary based on the reference frame of the observer.[25]

In one sense, STR reinterpreted certain known effects by abolishing reference to an ether and the notions of absolute time and space that had been attached to it. However, it is another myth in the history of relativity theory that it expelled the old ether physics immediately. Special relativity did not *disprove* the ether; rather, it followed the principle of parsimony by stating that 'the introduction of a "luminiferous ether" will prove to be superfluous'.[26] Furthermore, the immediate reception of STR differed from country to country, and its implications for the ether theory were conceived differently in various national contexts.[27] During the period from 1905 to 1911 various commentators would contest, elaborate, and defend Einstein's theory.[28] Germany was the first place where Einstein was thoroughly discussed and actually understood, as one would expect since he published in German journals. The situation was completely different in France, where Poincaré dominated the physics community. Here Einstein was hardly ever mentioned prior to his visit to the country in 1910. Meanwhile in the United States, the tendency was to ridicule what American physicists found to be an absurd theory with impractical or even contradictory conclusions.[29] This conception was due in no small part from a general lack of interest and ignorance of the exact content and implications of the theory, but also due to a basic conviction that

[24] Both speculated about changes in molecular forces, without being able to pinpoint any exact mechanism. See Kragh, *Quantum Generations*, 88.

[25] An accessible discussion of these concepts and their interpretations is available in Kennedy, *Space, Time, and Einstein*.

[26] Einstein, 'On the Electrodynamics of Moving Bodies', 38.

[27] See especially Goldberg, 'In Defense of Ether'; cf. Swanson, *The Ethereal Aether*, 171-189.

[28] Goldberg, 'In Defense of Ether', 97-98.

[29] Ibid., 98.

physics ought to express its theories in completely intuitive categories. The Americans' attitude was largely shared by the British science community, where physicists were trained to think with the concept of ether in a much more systematic way than anywhere else.

To the extent that special relativity revolutionised physics, it was a slow revolution. It arose from earlier research programmes, and it was not immediately accepted. This gives us reason to be suspicious of exaggerated claims of a revolution occurring around 1905; that is a claim which belongs to the realm of emic historiographies. In reality, relativity was born from research programmes in Victorian physics, especially Maxwellian electrodynamics and ether physics. The "modern" gradually grew out of the "classical".

Relativities II: The General Theory and the Birth of Modern Cosmology

Einstein's general theory of relativity (GTR) was developed gradually through a series of papers between 1907 and 1915. It was essentially a new theory of gravitation, resting on a generalisation of the insights from STR, and a novel geometrisation of space and time. In short, the theory attempted to give a new description of Newton's law of universal gravitation, an effect which had essentially lacked a mechanism for over 200 years. GTR contributed a new description of gravitation as a *geometrical* property of space and time, or more precisely, of the curvature of the spacetime continuum.

As with the STR, the GTR had first been conceived from a number of innovative thought-experiments regarding motion, acceleration, and weight. It started with the so-called "equivalence principle", first stated in 1907, which postulated that there is no difference between the "force" experienced by the gravitational pull of heavy object (such as the Earth) and an equal force felt while standing in an accelerating reference frame (e.g. inside a rocket).[30] However, its full formulation required the development of a set of highly complex equations, known as the "Einstein field equations", which essentially make up the hard core of the theory. These equations were presented before the Berlin Academy of Sciences in November 1915.

Several explanations and predictions could be derived from these equations, a fact which was crucial for the persuasiveness and eventual acceptance of the theory.

[30] Einstein, 'On the Relativity Principle and the Conclusions Drawn from It'.

The theory provided a satisfying explanation of the anomaly of the precession of Mercury's perihelion; but much more spectacularly, it predicted that light could be bended around heavy objects due to the curvature of space.[31] While Mercury's eccentric perihelion was a well known phenomenon, the precise description of how light would bend around heavy objects constituted a completely novel empirical prediction. An opportunity to test the hypothesis arose only a few years after the prediction was made, during the solar eclipse of 1919. British physicists arranged two expeditions to areas where the eclipse was total: Frank Dyson went to Principe Island, off the western coast of Africa, while Arthur Eddington headed to Sobral in Brazil. Observing and photographing the event, the physicists were able to conclude that stars passing by the blackened sun did indeed seem to change their positions to a degree that was in good (although not perfect) agreement with Einstein's prediction.[32]

Due to its wide range of consequences for astrophysics and its new topographical approach to the universe, the acceptance of general relativity was a significant impulse for the birth of modern cosmology. Einstein himself may be seen as initiating this movement with his paper on 'Cosmological Considerations Concerning the General Theory of Relativity', published in the *Proceedings of the Prussian Academy of Sciences* in 1917.[33] Other notable scientific cosmologists include Eddington and James Jeans (both of whom will be discussed in much more detail in our later chapter on natural theology), as well as the Dutch physicist Willem de Sitter, the Belgian Georges Lemaître and the American astronomer Edwin Hubble. In the period between 1917 and 1930, the main problem cosmologists were occupied with was whether the universe was closed or open, with Einstein's model supporting a closed variety. When Hubble found observational evidence for the expansion of the universe in 1930, the field moved

[31] A third prediction was the phenomenon of "gravitational redshift", meaning a change in the observed wavelength of electromagnetic radiation due to the relative strength of the gravitational fields of the emitting and the receiving body. This effect was very difficult to measure, and did not form a persuasive part of the case for GTR until the late 1950s.

[32] See Kragh, *Quantum Generations*, 97.

[33] Ibid., 349.

on to be more interested in determining origins and ends, with the "big bang" model emerging as a leading hypothesis.[34]

However, the GTR's account of gravitation also had other implications for cosmology. It gave a new framework for explaining the evolution of stars and solar systems, and the formation of gravitational singularities, or black holes. All of these have continued to be central areas of research for scientists interested in the size, shape, history, and destiny of the cosmos as a whole, and have greatly contributed to an understanding that the universe is an even stranger place than it seems from a pleasant, blue earth.

3 The Development of Quantum Physics

A Chronological Overview

The field of quantum physics developed parallel to the relativity theories, focusing on the study of certain newly discovered subatomic particles and the interactions of matter and electromagnetic phenomena. In the present section I will provide a brief and essential chronology of how the quantum theory developed into a system of quantum mechanics between approximately 1900 and 1930. This overview will be based on a standard "internalist" narrative, with a couple of important contextualising points where they seem particularly relevant for the overall argument.[35] With an overview of the basic historical facts in place, we shall later turn to a thorough discussion of an "externalist" interpretation of the early history of quantum mechanics associated with the Forman thesis.

Quantum theory developed out of two lines of research arising in the early 1900s, namely Max Planck's research on black-body radiation, and Einstein's 1905 work on the

[34] The first variety of a big bang model of the origin of the universe had been proposed, although rather speculatively at the time, by Lemaître in 1927. It was largely ignored until Hubble's significant discovery. See Kragh, *Quantum Generations*, 349-350.

[35] The basic factual claims about historical sequence in this section have been borrowed from Helge Kragh, *Quantum Generations*, which is a meticulously documented standard work in the history of 20th century physics, building on, commenting, and synthesising decades of earlier scholarship in this field. I have, however, also referenced a number of other sources to supplement Kragh on particular issues. All of this is indicated in the footnotes, supplied with precise references to primary sources when deemed particularly important.

photoelectric effect. While Planck's research showed that thermal radiation from black-bodies deviated radically from what was expected by "classical" models in thermodynamics, Einstein's signalled the fall of the wave theory of light by proposing that electromagnetic radiation was to be understood as localised quanta of energy, which would later be termed "photons". The importance of these developments were recognised during and following the 1911 Solvay conference, where, as we have seen, the idea of a break away from a "classical" worldview was taking shape. Following the Solvay congress, new models of the atom were developed on the lines of the emerging quantum theory and atomic physics: Ernest Rutherford first presented his important but entirely "classical" planetary model of the atom in 1911 (more on this in the next section), and Niels Bohr enhanced it in 1913 by bringing it up to speed with the new quantum theory. At this point, a coherent non-classical picture of the nature of matter was starting to take shape, growing out of the Solvay conference community.[36]

The international cooperation that had just started bearing fruits was halted by the outbreak of war in 1914. Physicists were suddenly not just physicists: 'they were now German physicists, French physicists, Austrian physicists, or British physicists'.[37] Cooperation was exchanged for chauvinism, and the efforts of European scientists were increasingly directed away from fundamental physics towards the development of industrial and military applications.[38] In Germany, physicists now helped develop poisonous gases and telecommunication technologies for military and espionage purposes. Across the channel, English physicists worked on new ranging techniques for use with antiaircraft systems and for detecting the much feared German submarines.[39] Some "pure physics" was still carried out despite this militarisation of scientific production, but the international cooperation that had characterised development of the earlier quantum theory ceased. When collaborative work on quantum physics re-emerged after the war it was in a very different cultural climate, torn by the destructive power of new weaponry, and characterised by growing social, political and economic anxieties.

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[36] Again, compare this view with Staley's cited above.

[37] Kragh, *Quantum Generations*, 131.

[38] Hartcup, *The War of Invention*; cf. Jeff Hughes, *The Manhattan Project*, 15-44; Kragh, *Quantum Generations*, 120-135.

[39] Overview in Kragh, *Quantum Generations*, 133-134.

International cooperation was slowly restored after the war. Above all, Niels Bohr succeeded in building an institution in Copenhagen in the 1920s that facilitated and benefited from a unique spirit of exploration in an environment of international cooperation, a milieu that would give rise to the dominant "Copenhagen interpretation" of quantum mechanics.[40] Bridging some of the national divides that had widened as a consequence of war, Bohr's institute attracted as many as 63 visiting physicists from 17 countries between 1920 and 1930.[41] Copenhagen became the central connecting point on what may be termed the Copenhagen-Munich-Göttingen axis – three extremely productive milieus in the production of quantum mechanics in the 1920s.

A series of essential breakthroughs occurred in the period 1924–1927, leading to the development of a number of important concepts. In 1924, the French physicists Louis De Broglie proposed a model of wave/particle duality, which would go on to inspire new interpretations, especially in the work of Erwin Schrödinger.[42] Another event of 1924 was connected with the collaboration of Bohr, the Dutch physicist Hendrik Kramers, and the American John Slater. Together, they developed a controversial theory that radiation phenomena could not be given a causal explanation, arguing that the interaction between atoms and radiation only allowed for statistical descriptions.[43] Although the original Bohr-Kramers-Slater theory proved to be inconsistent with experiments, its rejection of causality for certain phenomena would greatly influence later developments in quantum mechanics.

1925 brought new important developments. Wolfgang Pauli published his exclusion principle, which clarified some unsolved issues in Bohr's atomic model, and Heisenberg developed the first relatively successful attempt to create a full mechanical theory for quantum mechanics: the highly abstract and mathematical "matrix mechanics". The idea was first suggested by Heisenberg alone, arguing for a purely abstract and mathematical redefinition of mechanics, but it was only completed through collaboration with Heisenberg's senior colleague in Göttingen, Max Born, and Born's

[40] See especially Peter Robertson, *The Early Years: The Niels Bohr Institute, 1921–1930*.

[41] See table 11.1 in Kragh, *Quantum Generations*, 160; cf. Robertson, *The Early Years*.

[42] Kragh, *Quantum Generations*, 164.

[43] Ibid., 161.

assistant, the young Pascual Jordan.[44] The new matrix mechanics was impractical, however, and it was met with much scepticism due to its unusual and difficult mathematical formalism.

In the following year, 1926, the Heisenberg-Born-Jordan matrix mechanics was challenged by the Austrian physicist Erwin Schrödinger.[45] Matrix mechanics was essentially a *particle* model of energy quanta; Schrödinger, picking up on the still little known work of De Broglie, developed a new *wave model* that was able to account for the same data. An advantage of Schrödinger's model was that it could be expressed in a formalism that was well-known, while satisfying the conceptual preference for continuity in nature.[46] Thus arose the unusual situation that two mechanical models that assumed very different fundamental views of nature and deployed different mathematical tools appeared explanatorily equivalent. Schrödinger demonstrated that his wave function could be translated into corresponding expressions in matrix mechanics, and the other way around.[47] The same year, Born suggested a *probability* interpretation, which combined the wave function with the particle model by considering the function as an expression of the probabilities of the whereabouts of an electron. This apparently solved the problem, but only by introducing an irreducible probabilistic element into physics; nevertheless, it soon won popularity in the Copenhagen-Göttingen-Munich axis.[48]

An intense period of scientific developments was concluded in 1927, when Heisenberg published his "uncertainty principle" and Bohr developed the concept of "complementarity". Both concepts touched explicitly on philosophical aspects of quantum mechanics, and both became defining elements of the Copenhagen interpretation.[49] Heisenberg's principle was initially derived by way of a philosophical reflection on an experimental problem, strongly influenced by an anti-metaphysical

[44] Heisenberg's original paper was published in *Zeitschrift für Physik* in september 1925, and the so-called "Dreimännerarbeit" appeared a few months later, in November. Cf. Kragh, *Quantum Generations*, 162-163.

[45] Ibid., 163-165.

[46] Ibid., 165-166.

[47] This was strengthened further the same year by Jordan and Paul Dirac, who independently of each other developed a transformation theory unifying Heisenberg and Schrödinger's models. Cf. ibid., 166.

[48] Ibid., 166-167.

[49] See Brush, 'The Chimerical Cat', 396; Heilbron, 'Earliest Missionaries of the Copenhagen Spirit'.

instrumentalist version of positivism.[50] Heisenberg's starting point was that statements about "the position of an electron" were only meaningful when defined in terms of the *experimental procedures* through which position may be measured. In quantum mechanics this was problematic, because the experimental procedure for determining an electron's position involved manipulating that entity so that its *momentum* would change. Thus it was impossible even in theory to precisely determine both the position and the momentum of particles at the same time. Measuring one value meant manipulating the other. Heisenberg thus proceeded to give the next-best option: deriving an equation expressing the minimum necessary degree of indeterminacy in measurements of position and momentum.

This might at first appear to be a mere practical inconvenience in the study of subatomic particles. Heisenberg, however, saw much deeper philosophical consequences in his argument. The uncertainty principle, according to Heisenberg, demonstrated that physics can never know all aspects of a given physical system, since some observations mutually exclude one another. Furthermore, if the present state of a physical system cannot be determined, then it follows that we cannot determine the future state of any system either. In this way Heisenberg's argument acts as a counterpoint to Laplace's famous thought experiment about the calculability of all future events: classical causality, and particularly classical determinism, falls. One might still object that, even if this epistemological point holds true (that physicists' possible *knowledge of* nature is limited), nature may still be causally determined on some deeper level to which we do not have access. However, since Heisenberg's point was a radically positivistic one, he countered that any such claim was pure speculative metaphysics devoid of meaning:

> As the statistical character of quantum theory is so closely linked to the inexactness of all perceptions, one might be led to the presumption that behind the perceived statistical world there still hides a "real" world in which causality holds. But such speculations seem to us, to say it explicitly, fruitless and senseless. Physics ought to describe only the correlation of

[50] The paper was published in the journal *Zeitschrift für Physik* as 'Über den anschaulichen Inhalt der quantentheoretischen Kinematik und Mechanik'. An English translation is available as 'The Physical Content of Quantum Kinematics and Mechanics', in John Archibald Wheeler & Wojchiech Hubert Zurek (eds., trans.), *Quantum Theory and Measurement*, 62-84. For discussions, see Jammer, *The Philosophy of Quantum Mechanics*, 56-71, 75-78; cf. Peter Dear, *The Intelligibility of Nature*, 151-156.

> observations. One can express the true state of affairs better in this way: Because all experiments are subject to laws of quantum mechanics … it follows that quantum mechanics establishes the final failure of causality.[51]

Already before the paper was published, Bohr had commented to Heisenberg that his thought experiment on the problem with measuring electrons had a weakness in that it rested too much on a classical particle picture, while neglecting the wave aspects of photons and electrons.[52] It was this problem that Bohr tried to capture in his own concept of *complementarity*, which was first presented at a 1927 conference in Como, Italy, commemorating the centennial of Alessandro Volta's death.[53] Following Heisenberg's point about the indeterminacy of measurement, Bohr stressed that one cannot measure the state of a quantum mechanical system without disturbing it. The implication of this, in Bohr's view, was that a strict distinction between the observer and the observed was not anymore tenable. This seemed to pose serious problems for the possibility of truly objective knowledge in physics. The complementarity principle was a way to phrase this problem, but also an attempt to overcome its worst consequences. It followed from Heisenberg's principle that the observer, in setting up the experimental apparatus, must decide whether to measure the momentum or the position of a quantum entity. Quantum mechanics thus permit *complementary* descriptions of physical systems, Bohr argued, meaning descriptions which are mutually exclusive, but equally necessary for a complete picture to be formed. Bohr's most central example was the wave/particle duality: some experiments require light to behave according to a wave model, while other experiments only make sense when a particle model is assumed.[54] This apparently fragmented and contradictory picture of the world did not trouble Bohr, in large part due to the conspicuous anti-realistic positivism that characterised the Copenhagen school. 'In our descriptions of nature', Bohr claimed, 'the purpose is not to disclose the real essence of the phenomena, but only to track down, as

[51] Heisenberg, 'The Physical Content of Quantum Kinematics and Mechanics', 83.

[52] Dear, *The Intelligibility of Nature*, 156-157.

[53] Bohr, 'The Quantum Postulate and the recent Development of Atomic Theory'; cf. Heilbron, 'Earlies Missionaries of the Copenhagen Spirit'; Kragh, *Quantum Generations*, 209-212; Dear, *The Intelligibility of Nature*, 156-158.

[54] Heilbron, 'Earliest Missionaries of the Copenhagen Spirit', 197-198.

far as it is possible, the relations between the manifold aspects of our experience'.[55] Science is not concerned with external reality "in itself", but merely with the systematisation of experience.

Debates about the completeness of quantum mechanics continued with increased force in the 1930s. The stage for this conflict was set during the fifth Solvay conference in 1927, in which Bohr presented his complementarity principle and defended the view that the Bohr-Heisenberg version of quantum mechanics was a complete theory, while Einstein devised various thought experiments aimed to show how quantum mechanics had to be incomplete (and, moreover, incompatible with his own theories).[56] Although the general verdict was that Bohr had emerged victorious, Einstein would continue to challenge quantum mechanics in the decades that followed.[57] By the 1930s, the debate focused particularly on the notion of indeterminacy and causality, and the possibility of a competing interpretation based on "hidden variables". The supporters of hidden variables experienced a heavy blow in 1932 when mathematician John von Neumann published what he claimed to be a mathematical proof showing that no such interpretation was possible. Von Neumann's proof played almost exclusively a *rhetorical* role in establishing the Copenhagen interpretation's hegemony: of those who referenced it, almost no-one had read it, at least not very carefully. In fact, when new interest in hidden variables emerged in the 1950s von Neumann's work was thoroughly scrutinised by mathematical physicists, resulting in the discovery of several inconsistencies and gaps in the argument.[58]

Two final attacks on the Copenhagen hegemony which should be mentioned came in 1935, once again in the form of thought experiments: the "Einstein-Podolski-Rosen (EPR) paradox", created by Einstein together with his Princeton colleagues Boris Podolski and Nathan Rosen; and Schrödinger's famous cat experiment. The purpose of both was to give a kind of *reductio ad absurdum* argument, showing that quantum mechanics in its present form leads to absurdities and must therefore be incomplete.

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[55] Quoted in ibid., 219.

[56] For documentation, see especially Andrew Whitaker, *Bohr, Einstein, and the Quantum Dilemma*.

[57] Kragh, *Quantum Generations*, 213-215.

[58] Ibid., 245. Note, however, that John Bell, who discovered these inconsistencies, would become more famous for his Bell theorem, which is another "no-go" theorem excluding *local* hidden variables as physically impossible. Cf. Arthur Fine, *The Shaky Game*, 40-63, 151-172.

Both may be seen as "realist" attacks on the consequences of the largely anti-realist or instrumentalist theory. EPR attempted to show that if one understands physical *concepts* as corresponding to physical *realities*, then one is left with inconsistencies that only have two possible resolutions: either one must break the "speed limit" of light required by special relativity, or one must assume a hidden variables model.[59] Less technical in form, Schrödinger's paradox involved the fate of an unfortunate cat put in a box that would be filled with cyanide acid once a radioactive substance made its first emission. Since the decay of radioactive materials is an indeterminate process, there is no way of knowing whether the cat is alive or dead at any given time. Since the Copenhagen interpretation assumes that there is no "reality" to the issue until a measurement is made, one is left with the paradoxical position that the poor cat is lost in an unreal limbo of both dead and alive at the same time. Despite the impression one sometimes gets from popular accounts from the 1970s onwards, Schrödinger intended this thought experiment to demonstrate what he found to be a blatant absurdity inherent to the anti-realist dogma of the Copenhagen school.

The EPR and Schrodinger's cat have become famous in philosophical and popular expositions of quantum mechanics, but they did not engage a large audience in the 1930s. The Copenhagen hegemony had been established, and the majority of physicists had better things to do than engage in what seemed rather futile and unnecessary philosophical discussions of a model that worked perfectly fine in practice.

4 RADIOACTIVITY: THE NEWER ALCHEMY?

We now turn to a third scientific development that has been of great importance not only to modern science and technology, but to the broader cultural perception of science as well: the discovery of radioactivity. As experimental studies of this strange form of energy started to emerge around the turn of the century by the likes of Marie and Pierre Curie, Ernest Rutherford, and Frederick Soddy, it became increasingly clear

[59] There is some disagreement and controversy over the exact interpretation of the EPR paradox. As Arthur Fine has pointed out, Einstein and Podolski seems to have wanted different things with it, and it was the latter who typed up the article that was published in 1935. All versions, however, clearly target the Copenhagen interpretation of quantum mechanics as being absurd, contradictory, or incomplete. See Fine, *The Shaky Game*, 26-39.

that the phenomenon shed important light on the nature of matter. Radioactivity would cause a revolution in chemistry, which had long rested on the philosophical view that the atoms of the elements were unbreakable, stable, and eternal entities. This had notably been the view of John Dalton's (1766–1844) atomic theory, and it was at the foundation of Dmitrii Ivanovich Mendeleev's (1834–1907) periodic table of the elements. It had been an extremely successful hypothesis, leading to much fruitful research and the ushering in of a veritable "golden age" of chemistry in the 19th century.[60] Due to such successes, the Daltonian view of stable, unbreakable atoms, governed by predictable mechanical interactions, had also become a standard ingredient in conceptions of the "scientific worldview": it was one of the pillars of Victorian scientific naturalism and an important component of the kind of "disenchanted world" implied by Laplace's thought-experiment of an omniscient "demon" capable of calculating all events in the universe. To the frustration of an earlier generation of chemists, those who studied radioactivity were starting to suggest that the Daltonian picture was fundamentally wrong. Radioactivity suggested that material atoms were themselves composite and unstable, and that elements might even be capable of *transmuting* from one into another.

It smacked of alchemy. In fact, in what might first look like a surprising re-evaluation of chemistry's ultimate "negative Other", references to alchemy soon became a standard trope for addressing radioactivity and the related discourse on the transmutation of metals. It was embraced by some of the leading scientists working in the field: chemists and physicists such as Frederick Soddy (1877–1959), William Ramsay (1852–1916), and Ernest Rutherford (1871–1937) were all explicit about the relation to alchemy. By the 1930s, when the theoretical revolution of radioactivity was settling down and technical applications were beginning to see the light of day, even standard textbooks would emphasise the link. Examples include Dorothy Fisk's *Modern Alchemy* (1936) and Rutherford's *The Newer Alchemy* (1937), both of which were favourably reviewed in the *Journal of Physical Chemistry*.[61] The reviewer of Rutherford's book even exclaimed that no-one was better qualified to write a comparison of the 'ancient' and 'modern alchemy' than the man 'who observed the first transmutation by

[60] On this period in chemistry, see e.g. Mary Jo Nye, *Before Big Science*, 1-56.

[61] C. S. Lind, 'Review of Dorothy Fisk, Modern Alchemy'; idem. 'Review of Ernest Rutherford, The Newer Alchemy'.

bombarding nitrogen with alpha particles and in whose laboratory … the first transmutation by purely artificial means' had been achieved.[62] Radioactivity had given alchemy a new place in the scientific imagination of the early decades of the 20th century.

The development of a "modern alchemy" on the intersection of chemistry, physics, radioactivity, historiography, popularisations of science, and even practical occultism, has recently been documented by Mark Morrisson, and it will be superfluous to reproduce his findings here.[63] Instead, we will focus on two points that are of immediate importance for our present concerns. First, the reinterpretation of alchemy in the early 20th century must be related to the broader shift in historiographical awareness that we see in this period. In short, what is the role of modern alchemy in view of emic historiographies of science? Secondly, and more importantly, the scientific *and* discursive developments of radioactivity must be placed in the context of our ongoing discussion of disenchantment. What did the "modern alchemy" mean for the problem of disenchantment? To what extent did radioactivity, a field of inquiry which posterity has tended to link automatically with the greatest destructive powers created by man, the most inhumane face of technological mastery, represent in its early years yet another contestation of the supposedly disenchanted worldview of "classical" science? I will return to these questions later, but first we must gain a basic overview of the scientific developments involved.

The Discovery of Radioactivity, Phase 1: Becquerel and the Curies

In 1896, Henri Becquerel (1852–1908) had found that uranium salts spontaneously emitted a mysterious form of energy, which clouded nearby photographic plates with black spots.[64] While it was first thought to be a form of x-ray phenomenon, its deviation from the expected pattern soon suggested otherwise and the phenomenon was labelled "uranium rays". Two years later, in 1898, Pierre (1859–1906) and Marie Curie (1867–1934) discovered two new elements, polonium and radium, while examining uranium ore in their laboratory in Paris. Both elements emitted an extremely intense energy, which behaved like Becquerel's uranium rays. Since this energetic ray now seemed

[62] Lind, 'Review of Ernest Rutherford, The Newer Alchemy', 693.

[63] Morrisson, *Modern Alchemy*.

[64] Gordin, *A Well-Ordered Thing*, 211-212. Cf. Kragh, *Quantum Generations*, 30-32.

connected not only with the element uranium, Marie Curie coined the more general term "radioactivity". By the early 1900s it had become clear that radioactive emissions were of a complex nature: they appeared to be a mix of several types of radiation, which became known as alpha, beta, and gamma rays.[65] While the beta and gamma rays were quickly identified as "electromagnetic" phenomena (beta rays were later shown to be electrons emitted from the atom, while gamma rays are extremely energetic, high frequency electromagnetic waves), the nature of the alpha rays was more controversial.[66]The leading hypothesis proved particularly controversial for chemists, because it contradicted the established view of stable, immutable elements: it held that radioactivity involved the *decay* of the radioactive elements, gradually transmuting into other, lighter elements in the process.

The Russian chemist Mendeleev, originator of the vastly important periodic law, was one of the staunchest opponents of this interpretation of radioactivity.[67] His worry was that, in opening up for the spontaneous decay of chemical elements, Curie's theory of radioactivity introduced an unwanted *capriciousness* to the understanding of matter. In a personal notebook from his visit to the Curies' laboratory in Paris in 1902, Mendeleev even likened their work to spiritualism – a phenomenon he had spent many hours debunking in Russia: 'must one admit that there is spirit in matter and forces? Radio-active substances, spiritualism?'[68] In attempts to save the old metaphysics of chemistry, Mendeleev proposed alternative theories to account for the radioactive phenomena. Dismissing the emerging ideas as an attack on chemistry itself by a

[65] See Kragh, *Quantum Generations*, 32-33.

[66] For a tidy chronological overview of these debates and the experiments involved, between 1898 and 1902, see Thaddeus J. Trenn, *The Self-Splitting Atom*, 10-14.

[67] On Mendeleev, see Gordin, *A Well-Ordered Thing*.

[68] Mendeleev quoted in Gordin, *A Well-Ordered Thing*, 213. I have not been able to double-check this quotation, which is taken from an unpublished notebook. Besides Gordin's work, it is only discussed in the Russian secondary literature. While the comparison with spiritualism is no doubt a rhetorical exaggeration on the part of Mendeleev, it is not hard to imagine why he would seize on it: Mendeleev was known as a fierce critic of spiritualism in Russia, having spent some time debunking it; the Curies, on the other hand, (and especially Pierre) were dabbling in spiritualist séances, and also partook in "scientific investigations" of famous mediums in Paris. For these reasons, it was perhaps easy for Mendeleev to draw this particular connection in order to express his worries about the view of animated matter that radioactivity seemed to suggest. It appears that both spiritualism and radioactivity were topics on which Mendeleev and the Curies disagreed.

combination of 'superstition and sloppy reasoning', he even took to ether theory in order to find a physical hypothesis for radioactivity that did not violate the immutability of atoms.[69]

Radioactivity, Phase 2: Soddy, Rutherford, and the Transmutation of Elements

The disintegration and transmutation theory was to win general acceptance in what may be termed the second phase of radioactivity research, from 1903 to 1919. This period is demarcated by the year that natural, spontaneous transmutation was first observed in a laboratory (1903), and the year when controlled, *artificial* transmutation was achieved (1919). Central to this development were the New Zealand-born physicist Ernest Rutherford, and the young English chemist Frederick Soddy. Between October 1901 and April 1903 the two cooperated on what would become highly influential work at McGill University in Montreal, Canada, establishing the transmutation theory experimentally, and sparking off a quest for artificial transmutation.[70]

Rutherford and Soddy experimented with the radioactive element thorium, demonstrating that the radioactive alpha-decay of thorium produced completely different elements. The findings were published in a series of joint scientific communications to the *Philosophical Magazine*, resulting in the establishment of the disintegration theory of radioactive decay in 1903.[71] The ramifications of this theory were broad. It was the final blow to the conception that the atoms of the elements were simple, stable entities. The disintegration theory explained the radioactive transmutation of the elements in terms of the emission of alpha particles from the atom. Furthermore, the theory held that such transmutation of elements occurs spontaneously in nature. This had ramifications for views on the origin and evolution of substances, and could be used to explain the relative rarity and abundance of different elements, as well as why certain elements often seemed to occur naturally together. For

[69] See Gordin, *A Well-Ordered Thing*, 215. Mendeleev was not alone in using ether theory this way: already in 1897 the British physicist George Gabriel Stokes had proposed that the uranium molecule makes a wiggle which makes the ether around it vibrate, causing the radiation; even the Curies had considered that radioactive elements were somehow 'transformers of ethereal energy'. Trenn, *The Self-Splitting Atom*, 15, 11.

[70] A detailed history of their 18-month collaboration and its context is available in Trenn, *The Self-Splitting Atom*.

[71] Cf. the timeline in Trenn, *The Self-Splitting Atom*, 4-6.

example, radium was shown to be a disintegration product of uranium, and the two would therefore tend to occur side by side.[72] Later in 1903, the nature of the mysterious alpha particles would also be identified. Now together with William Ramsay in London, Soddy proved experimentally that the alpha-particle was in fact an atom of *helium*. The element of helium was therefore produced spontaneously from other elements undergoing radioactive decay. A fundamental natural process had now been uncovered, and a new picture of matter emerged: in place of stable, immutable atoms, matter was constantly in flux, and subject to processes of evolution and decay. These processes happened spontaneously in a fundamentally undetermined manner.

* * *

The discoveries outlined above set the stage for what Mark Morrisson has called a 'transmutational gold rush' in chemistry between 1907 and the outbreak of war in 1914.[73] The gold rush was sparked by a communication to *Nature* in July 1907, in which William Ramsay proclaimed that he had successfully transmuted copper into lithium by exposing it to 'radium emanations'.[74] The communication was very well received, and within a few months both *Nature* and *The Lancet* were publishing pieces on the final realisation of a modern alchemy, wielding the power to transmute the elements.[75] Other chemists soon followed up, enthusiastically reporting confirmation of Ramsay's results, leading to broad public attention in such outlets as *The New York Times* and *Popular Science Monthly*.[76] There was only one problem: Ramsay's transmutation would eventually appear spurious – a result of stretching the interpretation of ambiguous experimental data too far. Ernest Rutherford had found that a lack of control of the experiment was the likely source for positive results: contaminated apparatus and small but continuous air leakages were sufficient to account for the tiny amounts of the

[72] For Soddy's views early views on the implications for a philosophy of matter, see his *Interpretation of Radium*, esp. 210-229.

[73] Morrisson, *Modern Alchemy*, 121-134.

[74] Trenn, 'The Justification of Transmutation', 57-59.

[75] *The Lancet* published an article on Ramsay's experiments with the title 'Modern Alchemy: Transmutation Realized', later in 1907. For a discussion, see Morrisson, *Modern Alchemy*, 121-123. For the praise in *Nature*, see also Trenn, 'The Justification of Transmutation', 58-59.

[76] Morrisson, *Modern Alchemy*, 122-124.

unexpected elements that were found.[77] In 1914 the enthusiasm of the chemists finally abated with the realisation that evidence for transmutation had been spurious all along.[78]

The 'age-old dream of man to manipulate the principles of matter' was, however, finally realised in 1919.[79] This year Rutherford, now at Cambridge, published four papers in *Philosophical Magazine* detailing how his bombardment of nitrogen with alpha particles (helium) had succeeded in disrupting the nitrogen atom so that it gave away a hydrogen atom and was itself transmuted into oxygen.[80] This was genuine artificial transmutation. With Ramsay's premature conclusions now forgotten, the new discovery of artificial transmutation was quickly noted by Rutherford's colleagues, including Soddy who wrote to convey his 'intense interest and admiration' for the results.[81]

Modern Alchemy and the Problem of Disenchantment

Having considered the broad lines of the major conceptual switch in chemistry at the beginning of the 20th century, we should return to the question of how these developments relate to the problem of disenchantment. There are at first sight two points that stand out as important. First, how do we see the conceptual switch in chemistry, from a Daltonian-Mendeleevian paradigm of stable elements, to a post-radioactivity paradigm of mutable and unstable elements in terms of disenchantment?

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[77] Trenn, 'The Justification of Transmutation', 58-60.

[78] Overview in Morrisson, *Modern Alchemy*, 130-134.

[79] Trenn, 'The Justification of Transmutation', 53.

[80] In simple notation: N + He → O + H. Ibid., 71-73.

[81] Quoted in Trenn, 'The Justification of Transmutation', 73. Interestingly, Rutherford himself was less interested in the achievement of artificial transmutation, attaching more importance to the fact that he had proved the atomic nucleus to consist of hydrogen atoms. This appeared to vindicate a theory that had challenge Dalton's theory a century earlier, namely the hypothesis of William Prout (1785–1850) that all material elements were ultimately reducible to one single "protyle" (*proto hyle*, "first matter"), and, furthermore, that this *Urstoff* was in fact the hydrogen atom. In 1920 Rutherford would name the positively charged core of the hydrogen atom the *proton* – an elementary particle which has subsequently become part and parcel of the conception of matter in the physical sciences. To Rutherford, the justification of the Proutian hypothesis was the major advance of his experiment, and it was the final nail in the coffin for the 19th century conception of solid, unchanging, stable elements. Trenn, 'The Justification of Transmutation', 74; cf. William H. Brock, *From Protyle to Proton*.

Secondly, what is the meaning of the central alchemical trope in this story, harkening back to an ostensibly "pre-disenchantment" scientific culture? How is it related to the creation of emic historiographies of science?

We have seen that the advent of radioactivity sparked not only enthusiasm, but also much scepticism. This scepticism was grounded precisely in the perception that radioactivity, if correct, seemed to go against an established metaphysics of chemistry and suggest that a different physical worldview was needed. Mendeleev even likened radioactivity with spiritualism and criticised the essentially *animistic* connotations of the claim that matter was able to give off large quanta of energy, spontaneously and without external excitation, and even transmute into other elements. These were indeed serious challenges to established conceptual models. We have seen earlier that the Victorian scientific naturalists had used the Daltonian theory of matter as one of their conceptual pillars, together with thermodynamics and biological evolution. As I argued in chapter two, this naturalistic worldview was in important respects a disenchanted one, and the Daltonian conception of matter was indispensible for its consistency. The redefinition of matter ensuing from the discoveries of radioactivity thus signifies the fall of the Victorian naturalists' mode of disenchantment. It seemed above all to question the epistemic optimism that held the natural world to be completely explicable and predictable.

This is a crucial point for understanding the emergence of the alchemy trope as well. The labelling of a new field as "alchemy" implied an opposition to established chemical knowledge of the 19th century, whether that opposition was embraced or rejected. The metaphor could be seized both as a *disqualification* (implying that a proposition is absurd, or in disagreement with established knowledge), and as a *positive* categorisation of a new science positioned on an explicit opposition to aspects of established teachings. The modern alchemy discourse would typically focus on a *philosophical* form of opposition, abundant examples of which can be found in Soddy's popular writings.[82] A curious emic historiography of chemistry emerges from this rhetorical disjunction between 19th century chemistry and "modern alchemy", which is

[82] Especially in *The Interpretation of Radium*, where Soddy dwells at length on cosmological questions such as the age and origin of matter and the elements, attacking geological creationism, while defending an almost animistic view of matter, given irreducible agency and subjected to some form of evolution.

adequately summarised by the chemist Stanley Redgrove in his 1911 *Alchemy: Ancient and Modern*:

> If we were asked to contrast Alchemy with the chemical and physical science of the nineteenth century we would say that, whereas the latter abounded in a wealth of much accurate detail and much relative truth, it lacked philosophical depth and insight; whilst Alchemy, deficient in such accurate detail, was characterised by a greater degree of philosophical depth and insight; for the alchemists did grasp the fundamental truth of the Cosmos, although they distorted it and made it appear grotesque. The alchemists cast their theories in a mould entirely fantastic, even ridiculous —they drew unwarrantable analogies—and hence their views cannot be accepted in these days of modern science. But if we cannot approve of their theories *in toto*, we can nevertheless appreciate the fundamental ideas at the root of them.[83]

In short, a re-appreciation of alchemy may lend 'philosophical depth and insight' to modern science, something that had, according to the argument, been lacking in 19th century chemistry. Viewed as a modern alchemy, radioactivity gives a new depth and sophistication to modern science. It also implies that the simplistic "disenchanted" picture of the Victorian era belongs to the past.

I will end this section with an important caveat: while the alchemical discourse about radioactivity emphasises aspects of the new discoveries that go against the strictly disenchanted picture, it would be much too simple to characterise it as a full-scale "re-enchantment of chemistry". The relation between modern alchemy and "mysterious incalculable forces" is not entirely straight-forward. Research on radioactivity started, as we have seen, with the discovery of certain mysterious new substances, which behaved differently from other known substances. The mystery was then solved through careful experiment and rigorous applications of reason – one might say in the ordinary "disenchanted" fashion. However, the theoretical outcome of solving it was that *all* matter had to be rethought along lines that do not fit the epistemic dimension of disenchantment very well. This tension is aptly illustrated by Soddy in *The Interpretation of Radium*:

[83] Redgrove, *Alchemy*, vi.

> Radium, a new element, giving out light and heat like Aladdin's lamp, apparently defying the law of conservation of energy, and raising questions in physical science which seemed unanswerable, is no longer the radium we know. But *although its mystery has vanished, its significance and importance have vastly gained*. … If we now ask, why is radium so unique among the elements, the answer is not because it is dowered with any exceptional potentialities or because it contains any abnormal store of internal energy which other elements do not possess, but simply and solely because it is changing comparatively rapidly, whereas the elements before known are either changing not at all or so slowly that the change has been unperceived. *At first this might seem as anti-climax*. *Yet it is not so*. *The truer view is that this one element has clothed with its own dignity the whole empire of common matter*. The aspect which matter has presented to us in the past is but *a consummate disguise, concealing latent energies and hidden activities* beneath an hitherto impenetrable mask. The ultra-material potentialities of radium are the common possession of all the world to which *in our ignorance we used to refer as mere inanimate matter*. This is the weightiest lesson the existence of radium has taught us … .[84]

The unmasking of mysteries, at least in Soddy's eyes, had ultimately made the world *more* remarkable, even enchanted, than it had been before: Soddy's language evokes the return of animated, living nature. Matter has previously appeared in disguise; the uncovering of 'latent energies and hidden activities' concealed in matter evoke the memory of the "occult forces" and "occult properties" referred to in medieval and early modern science and philosophy.[85] The notion of 'inanimate matter' is, finally, described as stemming merely from 'ignorance': the views of an immature stage in science that is now being left behind.[86]

Although radioactivity in this sense introduced hidden incalculability, even threatened to break down the distinction between the animate and inanimate in nature, science did not thereby abandon its ambition to *manipulate* and *control* nature. Indeed, the ultimate goal of artificial transmutation was precisely to tame and control these forces in order for humanity to shape the world to its own advantage. This *utilitarian* aspect of science is also strongly present in Soddy's writings: finding a way to unleash,

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[84] Soddy, *Interpretation of Radium*, 231-232. My emphases.

[85] For an overview, see Hanegraaff, 'Occult/Occultism', 884-886; cf. idem, *Esotericism and the Academy*, 177-191.

[86] Accidentally, the rhetoric has significant affinities with that of, for example, theosophical writers. See e.g. Asprem, 'Theosophical Attitudes toward Science'; see also chapter eleven in the present study.

convert, and direct the vast deposits of energy secretly stored in matter all around us was presented as the main goal of radiochemistry. After having mused on the purely philosophical aspects, Soddy wrote that 'the unlocking of the internal stores of energy in matter would, strangely enough, be infinitely the most important and valuable consequence of transmutation'.[87] Technological applications and control could save modern civilisation from collapsing under its growing demand for energy, and lay the foundation for infinite progress.[88]

This utilitarian rhetoric was an important aspect of the modern alchemy discourse surrounding radioactivity, and it appears that the perceived technological and economic side of alchemy was just as important in the analogy-making as any views of enchanted, living nature. This obviously makes a reading of radioactivity and modern alchemy on the lines of straightforward "re-enchantment" problematic. The conclusion must be that from the purely scientific perspective, as well as from the perspective of major popularisations of the field written by scientists, radioactivity considered as modern alchemy stands in a relation to disenchantment that is highly ambiguous. The flexible manoeuvring between different aspects of the problem of disenchantment also justifies the more nuanced approach called for in earlier chapters, and particularly demonstrates the need to break the concept down into components that are not, necessarily or always, connected by historical agents.

5 Physics, Worldview, and Culture: Revisiting the Forman Thesis

In the present section we shall take a an externalist and contextualist approach that may help us understand and explain the broader cultural meanings and interpretations invested in some of the scientific developments we have considered so far. This gives us a more complete framework for assessing the roles and motivations of scientists in engaging with the problem of disenchantment. Out of the three currents that we have discussed it is above all the case of quantum mechanics that must now be approached from an externalist perspective. Concepts such as acausality, indeterminism, wave/particle duality, and complementarity have made quantum mechanics philosophically interesting and secured much popular interest. Since the second world

[87] Soddy, *Interpretation of Radium*, 237.

[88] See especially Soddy, 'Transmutation: The Vital Problem of the Future'.

war, it has been used as justification for a range of exotic worldviews. While there is thus little doubt that quantum mechanics exerted a great influence on other parts of culture, there are also reasons to think that the specific interpretational framework given to quantum mechanics in the 1920s and 1930s was *itself* influenced by external cultural factors. The most explicit statement of this view has been developed by historian of science Paul Forman. In the following I will give a critical assessment of Forman's case for the cultural contingency of quantum mechanics, and suggest some modifications that give us a relevant framework for assessing the problem of disenchantment in the modern physical sciences.

Forman's thesis holds that the peculiar nature of quantum mechanics and its accompanying epistemological and ontological implications were shaped in significant ways by the cultural sentiments of the Weimar republic in the aftermath of the Great War.[89] In a controversial essay from 1971, Forman argued that the extraordinary ease with which German speaking quantum physicists were willing to accept that causality had been expelled from the workings of nature becomes fully intelligible when viewed as an expression of a certain Zeitgeist in Germany following the experience of defeat in WWI, characterised by a wish to escape the terror of history and the pressure of determinism.[90] A general hostility towards science was gaining ground, based on a perception that science had not only failed in its visionary promises, but also catastrophically contributed to the horrors of the war. In the popular mind, science was increasingly confused with industry, technology, and military applications, while its philosophical outlook was perceived to be one of cold and bleak materialism, mechanism, reductionism and determinism – all taken to represent a decline of the human spirit. Significantly, Oswald Spengler's *Untergang des Abendlandes* (*Decline of the West*) was published in parallel with the development of quantum mechanics, going through 60 printings between 1918 and 1926. A total of 100,000 copies was printed in this period, equalling one third of Germany's college students at the time.[91] Spengler's pessimistic view on modern civilisation, including science, was '[a]lmost universally

[89] The thesis is developed in three articles in particular: Forman, 'Weimar culture, causality, and quantum theory'; idem, 'Reception of an Acausal Quantum Mechanics in Germany and Britain'; idem, '*Kausalität*, *Anschaulichkeit*, and *Individualität*'.

[90] Forman, 'Weimar culture, causality, and quantum theory'.

[91] Forman, Weimar culture, causality, and quantum theory', 30.

read in academic circles'.[92] In this intellectual climate, scientists needed to reinvent themselves. The ways in which quantum mechanics was formulated in the 1920s can thus be seen as an exercise of adaptation to a hostile intellectual environment.

In his first article on the thesis, Forman situated the many 'conversions to acausality' by leading German physicists in the period between 1919 and 1927 in context of a general scepticism toward science, and particularly what we might call a "disenchanted" stereotype of science.[93] Responding to critics of the thesis,[94] Forman has later made certain qualifications to his earlier formulations: less radical than some critics have made it to be, the basic point is simply that the actual discoveries and innovations of quantum mechanics did not *necessitate* the worldview implications and interpretations that its progenitors saw in them. Other options were available, but almost unanimously rejected in Germany. This more carefully stated version of the thesis will be taken as a starting point here.[95] I will briefly discuss the Forman thesis's claim regarding the rejection of causality, before proceeding to a criticism and a re-assessment aimed at situating Forman's thesis in the broader argument of the present work.

CAUSALITY AND THE WEIMAR ZEITGEIST

As seen in the historical overview of quantum mechanics, a debate arose in the mid-1920s about whether a causal interpretation was at all possible. According to Forman, the reasons for the revolt against causality is to be found in the cultural dynamic of Weimar Germany rather than in the scientific record itself. First of all we need to acknowledge what physicists and philosophers of the period understood by "causality". This question is more complicated than it may seem on the surface. The concept of

[92] Ibid.

[93] Forman, Weimar culture, causality, and quantum theory', 63-108. Forman later broadened his thesis to include some other features of broader cultural importance that quantum physicists wrote about , namely views on visualizability/picturability (*Anschaulichkeit*) and individuality. In the present chapter I will limit myself to the aspect of causality. See, however, Forman, '*Kausalität*, *Anschaulichkeit*, and *Individualität*'.

[94] E.g. John Hendry, 'Weimar Culture and Quantum Causality'; Stephen Brush, 'The Chimerical Cat'; Kraft & Kroes, 'Adaptation of Scientific Knowledge to an Intellectual Environment'.

[95] Also not that this version of the Forman thesis is in agreement with the theoretical discussions of chapter three, and my methodological notion of a naturalistic constructionism.

causality is connected with a number of philosophical and metaphysical problems which have been probed in numerous ways through history.[96] In different periods and contexts it has been connected with other concepts such as intelligibility, determinism, or the notion of natural law. From a historical perspective, the relation between these concepts is not fixed; however, Forman has demonstrated that all the above tended to be related to each other by German physicists in the period that concerns us here.[97] Definitions of causality tended to be expressed in terms of lawfulness: as Moritz Schlick, one of the central figures of the Vienna circle, explained in 1920, '[t]he principle of causality is … the general expression of the fact that everything which happens in nature is subjected to laws which hold without exception'.[98] Even Heisenberg explained it this way in 1930, talking about 'the idea that natural phenomena obey exact laws – the principle of causality'.[99] In contrast to this *nomological* (i.e. following laws) concept of causality the *ontological* notion of causality as "cause and effect" had already been under attack by scientists and philosophers for a very long time. Forman mentions contemporary critics of ontological causality in Ernst Mach and the positivist movement, as well as neo-Kantians such as Ernst Cassirer. One could also mention philosophers such as Henri Bergson in France and Bertrand Russell in England, with a tradition going back to David Hume's famous criticism of causality in the 18th century.[100] According to Mach and the positivists, causality in the sense of cause and effect was "metaphysical", "animistic", and "fetishistic"; it needed to be replaced by a model purely based on functional relations that could be expressed mathematically.[101] Detesting causality in the ontological sense was thus hardly controversial.

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[96] A good technical overview of the metaphysics of causality is available in the *Stanford Encyclopedia of Philosophy*. See Jonathan Schaffer, 'The Metaphysics of Causation'.

[97] Forman, 'Weimar culture, causality, and quantum theory', 63-70.

[98] Schlick's statement opened an article on 'Naturphilosophische Betrachtungen über das Kausalprinzip', published in the prestigious journal *Naturwissenschaft*. See Forman, 'Weimar culture, causality, and quantum theory', 65.

[99] Heisenberg's remark in 1930 fell as part of his introductory work, *The Physical Principles of the Quantum Theory* (1930). Cf. Forman, 'Weimar culture, causality, and quantum theory', 65.

[100] See especially Russell, 'On the Notion of Cause' (1912); Bergson, *Time and Free Will* (1910 [1889]), 199-221.

[101] Forman, 'Weimar culture, causality, and quantum theory', 68.

Another and related aspect of physicists' conception of causality in this period was its connection with *determinism* of the Laplacian variety.[102] Philosophers have often considered determinism and causality to be two logically distinct issues; however, physicists of the period covered by Forman's thesis tended to confuse the two to the point of identity.[103] On that premise, objecting to determinism meant objecting to causality, and vice versa.[104] Realising that determinism was very unpopular at this time, and that science was suspect on the grounds of being committed to it, the assumed connection between determinism and causality makes it easier to understand the sudden ease with which physicists accepted an acausal view of nature in light of quantum mechanics. This was, of course, irrespective of the fact that one could easily remain a determinist without believing in strict mechanistic causality, whether by teleological notions of predetermination, Leibnizian pre-established harmony, or any such philosophical device.

Conversions to acausality were numerous. In 1926, Max Born expressed that he was 'inclined to abandon determinedness in the atomic world', and was soon followed by colleagues such as Sommerfeld and Jordan. [105] The insistence on indeterminacy and acausality was, however, much more explicit in Heisenberg's 1927 article on the uncertainty principle. Even if that principle could be read as a *methodological* problem arising from imperfections of measurement, as already seen, the young physicist concluded his article with the bold statement that 'quantum mechanics establishes definitively the fact that the law of causality is not valid'. Heisenberg makes Born's more carefully stated "inclination" into a full-blown categorical statement.[106] The claim is now that quantum mechanics shows nature *itself* to be inherently and fundamentally acausal. This interpretation eventually gained a hegemonic status in the Copenhagen interpretation, despite much criticism by people such as Einstein. Explaining why this

[102] See e.g. Pierre-Simone Laplace, *Philosophical Essay on Probabilities*, 2, quoted in chapter one.

[103] For an overview of how different relations between causality and determinism have been drawn up in physics since the early modern period, and how definitions of both have changed with broader conceptual changes in physical science, see Friedel Weinert, *The Scientist as Philosopher*, 193-276.

[104] Forman, 'Weimar culture, causality, and quantum theory', 69.

[105] In Forman, '*Kausalität*, *Anschaulichkeit*, and *Individualität*', 336. For a thorough discussion of such "conversions" to acausality, see idem, 'Weimar culture, causality, and quantum theory', 74-90.

[106] Forman, '*Kausalität*, *Anschaulichkeit*, and *Individualität*', 336.

debate was settled the way it was is what Forman's thesis tries to achieve, and it does so by questioning the necessity and "naturalness" of the acausal interpretation:

> There is great disparity between quantum mechanics, per se, and the world-view implications immediately ascribed to it. Quantum mechanics is merely a statistical theory. As Einstein repeatedly but vainly emphasized, it cannot be regarded as a complete description of an independently subsisting microscopic world. Nor can it be regarded as an appropriate conceptual basis for describing our macroscopic world, where, unquestionably, we deal with individual objects and events, not statistical ensembles. Thus even categoric statements about the invalidity of the law of causality in the *physical* world go much too far, *not least because they slur over the fact that quantum mechanics is a deterministic theory of probabilities*. As for the still farther-reaching world-view implications ascribed to quantum mechanics – that it ensures free will, or the impossibility of a physicochemical explanation of life – one must say that *these are completely unwarranted*.[107]

Nevertheless, acausal interpretations not only emerged as intriguing possibilities, but immediately swept across the German physics community and were broadly accepted within few years. By contrast, physicists in France, Great Britain, and North America largely remained oblivious about such interpretations, and were often hostile when encountering them.[108] When American physicists got interested in the new quantum mechanics in the late 1920s, they were typically left cold by the so-called "Copenhagen spirit" of its missionaries.[109] Following a visit in Göttingen in 1926, the American atomic physicist Robert Oppenheimer recalled his encounter with the 'fantastically impregnable metaphysical disingenuousness' of German quantum physicists.[110] Similarly, although somewhat earlier, a letter correspondence between the American experimentalist and Nobel laureate Albert Michelson and British ether physicist Oliver Lodge in 1923 shows both expressing concerns about the "discontinuity" apparent in the developing quantum theory, even hopes that an enhanced ether theory

[107] Ibid., 336-337. Italics added.

[108] Forman, '*Kausalität*, *Anschaulichkeit*, and *Individualität*', 337; cf. idem, 'The Reception of an Acausal Quantum Mechanics in Germany and Britain', 23-38.

[109] Kragh, *Quantum Generations*, 172; Heilbron, 'Earliest Missionaries of the Copenhagen Spirit'.

[110] Alice Smith & Charles Weiner (eds.), *Robert Oppenheimer: Letters and Recollections*, 100.

may resolve the problem along with the strange implications of Einstein's relativity theories.[111]

Shortly put: there seems to have been something about Weimar Germany and its cultural sphere that made scientists from this area see something in quantum physics which others did not – or to eagerly accept something which others would remain hesitant about. Forman's claim is that this something was a specific cultural condition arising after Germany's military defeat and political and economic collapse, which may generally be characterised by three main features:

1) An anti-intellectualist, neo-romantic irrationalism, celebrating the spontaneous, intuitive, immediate, and "authentic", in place of the contemplatively "rationalistic";
2) An antipathy towards causality and mechanism in favour of a largely anti-modern *Lebensphilosophie*;
3) Antagonism towards natural science, particularly physics. Theoretical physics was seen as epitomising all that the neo-romantic *Lebensphilosophie* rejected; furthermore, physicists and scientists were seen as agents of the debauched, industrial, technocratic "West".[112]

These features resonate with the concept of "Occidentalism" – the mirror image of Orientalism – denoting a stereotyped, negative, polemical image of "the West", based largely on romantic ideas, which spread in Germany but also outside of Europe during the first decades of the 20th century.[113] In their discontent with modernity, significant

[111] Michelson to Lodge, August 18, 1923; Lodge to Michelson, August 30, 1923. Oliver Lodge papers, MS App. 89/71, University College London, Special Collections.

[112] These traits of the 'hostile intellectual environment' of German inter-war physicists are discussed at length in Forman, 'Weimar culture, causality, and quantum theory', 8-37, and in strongly condensed form in Forman, '*Kausalität*, *Anschaulichkeit*, and *Individualität*', 337-338.

[113] See Ian Buruma & Avishai Margalit, *Occidentalism: The West in the Eyes of Its Enemies*; cf. James G. Carrier (ed.), *Occidentalism: Images of the West*. Although this is not the place to enter into a deep discussion of these issues, one should note that the concept of Occidentalism has garnered some controversy. Particularly, Buruma and Margalit's model in which the stereotypes of the West are seen as produced by Western discourses struggling with modernity, particularly in rejections of the Enlightenment in German romanticism, other scholars have objected that this view is *itself* too

forces within German cultural life and intelligentsia summoned up a mono-causal image of all that was wrong in society, an image in which a stereotyped "modern West" was decried as cold, heartless, and mechanical, as well as morally degenerate. Quantum mechanics was forged in a cultural milieu that was generally hostile to the perceived "modern" ideals associated with science and the academy. This Weimar period Occidentalism was epitomised in Spengler's *Decline of the West*. Indeed, a condensed formulation of Forman's thesis on the rejection of causality is that physicists 'largely participated in, or accommodated their persona to, a generally Spenglerian point of view'.[114] The rejection of causality thus followed from Occidentalist biases of the Spenglerian type. The hope was to create a new physics, a whole new philosophy of nature, based on principles more friendly to *Lebensphilosophie*.

In concluding this presentation of the Forman thesis, I should add a cautionary note. Even though Forman states that his 'conclusion is admittedly radical',[115] externalist interpretations may always be taken in a variety of stronger and weaker senses. Forman prefers to describe the thesis as a 'meta-meta statement' about 'the physicists' statements about their descriptions of reality'.[116] Perhaps even more precisely, it could be characterised as a "meta-meta-meta statement" about (level 3) physicists' *philosophical* interpretations of (level 2) their *formal* descriptions of (level 1) the reality they measure in experiments (figure 5). It is not so much the "raw" data collected by scientists that is being explained as a contingent by-product of history, not even the data mediated through experimental devices, technical language and statistical calculations. It is rather the thoroughly "cooked" *interpretations*, the philosophical and even spiritual implications that are, in some sense, culturally determined.[117]

Furthermore, we have seen Forman stress that such cultural contingency is fully possible since the quantum mechanical theory is sufficiently open-ended on several points of interpretation. On this reading, the Forman thesis does not appear radically extravagant. It leaves, so to speak, the "rational component" of measurement,

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Eurocentric, and a more dynamic east-west relation should be considered. For this view, see especially Alastair Bonnett, *The Idea of the West*.

[114] Forman, 'Weimar culture, causality, and quantum theory', 55.

[115] Forman, '*Kausalität*, *Anschaulichkeit*, and *Individualität*', 344.

[116] Ibid., 344, 347 n.44.

[117] Cf. the distinction in Claude Lévi-Strauss, *The Raw and the Cooked*.

experiment, and discovery relatively autonomous, while identifying a cultural superstructure which is *constrained* but not *determined* by the rationality of science.

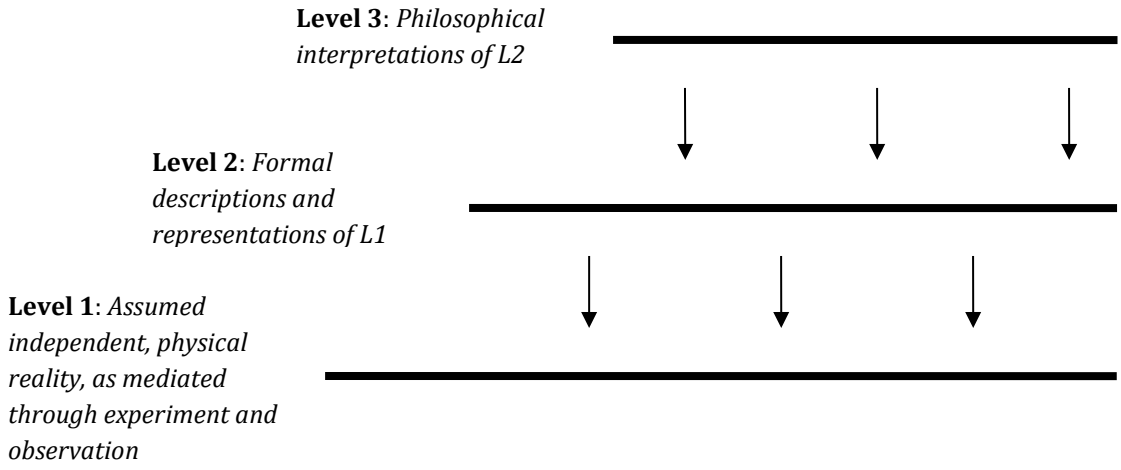


Figure 5: Three levels of scientific interpretation. On my reading, the Forman thesis is a claim about level 3 only.

FORMAN REVISED: CRITICISMS AND RE-EVALUATION

Writing in 1980 John Hendry noted that no general agreement on the Forman thesis had emerged in the history of science community, but that there was a dominant feeling of 'case not proven'.[118] More recently, Helge Kragh took the opportunity to revisit Forman's thesis in his comprehensive history of 20th century physics.[119] Kragh agrees that mathematicians and theoretical physicists responded to the Zeitgeist, notably, in his eyes, by refraining from justifying their vocation in terms of *utility*. The utilitaristic appeal had been very helpful in the campaign to professionalise the sciences in the 19th century, but now, under quite different societal conditions, it was exchanged for a strategy that portrayed physics as "culture".[120] Kragh agrees that the repudiation of causality was not strongly rooted in experimental or theoretical developments, but

[118] Hendry, 'Weimar Culture and Quantum Causality', 155. Important early criticisms were made by Hendry, and Kraft & Kroes, 'Adaptation of Scientific Knowledge to an Intellectual Environment'. These provided the basic arguments that have been reiterated by later critics.

[119] Kragh, *Quantum Generations*, 151-154.

[120] Ibid., 153.

could rather be seen as expressions of a vaguely "Spenglerian" worldview. Nevertheless, he insists there are 'good reasons to reject the suggestion of a *strong* connection between the socio-ideological circumstances of the young Weimar republic and the introduction of acausal quantum mechanics'.[121] In order to clarify my own position, and identify what seems to be certain common misunderstandings and misreadings of the Forman thesis, I will proceed to discuss Kragh's objections and defend Forman against some of them.

Kragh brings up seven points against a "strong" version of the Forman thesis; three of which seem to miss the target or attack a straw man, while the other four reflect genuine challenges that should not go unnoticed. Starting with the weak points, Kragh argues that Forman's thesis is defective because: (1) acausality 'and other Zeitgeist-related problems' were discussed in public lectures and addresses rather than in actual scientific papers; (2) cultural adaptations were concerned with the *evaluation* rather than *content* of science; (3) the young German creators of quantum mechanics were 'more interested in their scientific careers than in cultural trends'.[122]

I find these three objections to miss the point. Points (1) and (2) fail as serious criticisms and can in fact largely be seen as *consistent* with the reading of Forman that I have offered above. First of all, the thesis does *not* claim that the "rational component" was significantly affected by the cultural condition, only that its philosophical and ideological superstructure was.[123] Hence one would not necessarily expect to find 'Zeitgeist related problems' expressed in the actual daily work of physicists, as reflected in scientific papers. And yet, despite our expectations of finding an engagement with "worldview implications" primarily in popular science or (amateur-) philosophical literature, we *do* also find it in some of the most important scientific papers. This only strengthens the case for the Forman thesis, even though it was not necessary for the thesis as such to hold. Similarly, if (3) was shown correct, and young scientists only

[121] Ibid. Emphasis added.

[122] Ibid., 153-154. My numeration of Kragh's critical points (which can all be found in the earlier literature as well, but are conveniently summarised here) is not the actual order in which they are put forward in the text. I have changed their order to differentiate the relevant objections from those I feel are less on the spot.

[123] These two points were originally raised by Hendry, who made much out of the value/content distinction. See, Hendry, 'Weimar Culture and Quantum Causality', 157-60.

played on cultural trends as strategies to advance their careers, this would still remain a strong case for the importance of cultural context on the actual direction of scientific work. "Genuineness" is not required for the argument to work. The objection can thus only be used to adjust our perspective on *how* and *why* cultural context was able to drive scientific developments, by emphasising the personal agendas of young, career-conscious scientists.

The rest of Kragh's objections are more to the point, and raise serious criticisms against the *causal robustness* of Forman's thesis. It is indeed a problem for a strong reading that (4) leading physicists such as Sommerfeld, Bohr, Einstein, Planck and others were expressed critics of the Zeitgeist, and (5) that the first acausal model for quantum theory, the 1924 Bohr-Kramers-Slater radiation theory mentioned earlier, was formulated by a Dane, an American and a Dutchman: not a single Weimar republic scientist was involved. Even more importantly, this model was initially *not* accepted in Weimar Germany. Also contrary to Forman, Kragh notes that (6) many physicists saw purely scientific reasons for dispensing with causality in microphysics, and (7) that there was already a sense of crisis in 1920s physics rising from "internal" considerations concerning anomalies in existing atomic theories.

These are all valid points, and warn against overstating the importance of the broader cultural context. In the final analysis, I hold that a weak version of Forman's thesis remains plausible as long as one is ready to supply the socio-historical "externalist" account with "internalist" perspectives on the one hand, and *additional* external factors on the other. For example, Bohr's central role in Copenhagen already points us towards quite different external constraints than the Weimar Zeitgeist and *Lebensphilosophie*. In fact, the question of who were the philosophical influences on Bohr has generated a literature of its own, and the Danish philosopher Harald Høffding (1843–1931) has been put forward as especially important.[124] Bohr studied philosophy with Høffding, and it was through him that the physicist first became acquainted with Kierkegaard and Kant. It has been suggested that the influence of Kierkegaard appears in Bohr's formulation of complementarity, and that the Kantian views on time and space as categories of perception accounts for some of the fundamental differences between

[124] E.g. Jan Faye, *Niels Bohr*.

Bohr and Einstein.[125] In addition to this, we have already seen the importance of logical-positivist epistemological sentiments on the formulations of quantum mechanics in the 1920s, a position which was also based on neo-Kantianism. In short, several philosophical and cultural influences come together to form an intellectual reservoir from which the Copenhagen school would draw. The philosopher of science Mara Beller has even made the case that the peculiarities of the Copenhagen interpretation are, at least in part, the result of the eclecticism of physicists acting as amateur philosophers.[126] In her view, 'the inconsistencies [in Bohr's writings] are genuine', and stem from defects in Bohr's capacity as a philosophical thinker. The failure of later scholars to admit the flaws of Bohr's reasoning is, in Beller's view, due to a form of hero worship.[127]

Summing up, I largely follow Hendry who admitted that '[p]hysicists *were* influenced by the crisis-consciousness of post-war Europe and by the attitudes characteristic of the Weimar republic',[128] but remained sharply critical of the simplistic, mono-causal picture drawn up by Forman's social determinism. It is hard to disagree that 'no single set of influences – internal, social, philosophical, psychological, etc. – can be taken independently of the others'.[129]

6 Conclusion: the Forman Thesis and the Problem of Disenchantment

An approach to the history of physics between the wars on the lines of a revised, nuanced, and expanded Forman thesis is a promising way to tie together the major concerns of this book, namely a reconsideration of the disenchantment thesis and a

[125] Einstein had, of course, overthrown the Newtonian vision of absolute time and space, but had equally steered theorising about these concepts away from the Kantian theory of "categories of the understanding", in a new ontologising direction. See Faye, *Niels Bohr*; cf. James T. Cushing, *Quantum Mechanics: Historical Contingency and the Copenhagen Hegemony*, 99-103, 244 n.29, 245 n.43. A perspective which grants Høffding less importance is presented by David Favrholdt, *Niels Bohr's Philosophical Background*. For the philosophical dimension of space and time, and the implications of the Einsteinian revolution, see Kennedy, *Space, Time, and Einstein*.

[126] Beller, *Quantum Dialogue*, 270-276.

[127] Ibid., 275.

[128] Hendry, 'Weimar Culture and Quantum Causality', 171.

[129] Ibid.

relocation of the esoteric on the intersection of science and religion. To conclude the chapter I will now bring these questions to the fore, and assemble the threads that have been explored so far. My argument comes together in four different but connected points, which can be summarised as follows:

1) The trends in inter-war physics which Forman has interpreted as conversions to a generally Spenglerian worldview can better be seen as struggles with the "problem of disenchantment";
2) While particularly strong in Germany between the wars, for historically specific reasons, these concerns were much broader, and can also be traced to other scientific discourses as well, including interpretations of radioactivity in the French and Anglo-American contexts *before* the Great War;
3) Besides implying the contestation of disenchantment's main dimensions, these discourses led to the foundation of specific emic historiographies of science that connected up with the memory of "esotericism" and "rejected knowledge" as well as attempts to redefine the identity of science;
4) These encounters helped spawn new fields of esoteric/religious speculation and new natural theologies, some of which have later become very influential. An example of the latter is found in the emergence of what may be called "quantum mysticism".

The Problem of Disenchantment in Physics

It is intriguing to note that the difficult academic climate which Forman describes is also the context in which Max Weber gave the lecture in which he set forth the thesis on disenchantment and the intellectual sacrifice. While I have discussed at length how disenchantment may be construed as a problem to which people have responded in a variety of ways, we may also view the original formulation of disenchantment as being *itself* a response to the crisis-consciousness spreading in Germany after the Great War. Explicitly critical of the Spenglerian *Lebensphilosophie*, Weber's view of disenchantment and modern science's marked role within it resonate with some of the broader views on

what kind of reality science was uncovering.[130] While this historisation of Weber is interesting in itself, we should concentrate on applying the revised analytic perspective that we extracted from the concept of disenchantment in previous chapters. When we do that, the tendencies discussed by Forman may all be seen as struggles with the problem of disenchantment.

To the extent that the physicists we have discussed were driven by a reconsideration of the cultural *value* of the physical sciences, this may be characterised as an explicit rejection of the disenchanted view of science and the world. For most of those involved, the rejection concerned at least two of the three dimensions of disenchantment identified in chapter one. The core of the Copenhagen interpretation, following Heisenberg's uncertainty principle and Bohr's principle of complementarity, represented a radical break with the epistemic optimism of the disenchanted view. In Heilbron's apt description, '[e]nthusiastic resignation became the Copenhagen spirit'.[131] Furthermore, we have seen that the physicists of the Copenhagen spirit were too eager to philosophise to take the "pessimistic" dimensions of disenchantment seriously: implications for value and meaning were commonly addressed, for example in attempts to use quantum physics to defend free will, or to use complementarity to argue the irreducibility of organic life, consciousness, and human experience. In fact, the extension of quantum mechanics to the life sciences became a general trend in the 1930s and 1940s. Many of Bohr's thoughts on the issue were published in the collection of lectures and essays entitled *Atomic Physics and Human Knowledge* (1958), with essays such as 'Light and Life' (originally 1933), 'Natural Philosophy and Human Cultures' (1938), and 'Atoms and Human Knowledge' (1955). Partially inspired by Bohr, Pascual Jordan attempted to create a "quantum biology" allied to vitalistic conceptions of life in the 1930s, even fronting it as a politically correct biology for the Third Reich.[132]

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[130] Cf. the discussion in chapter one.

[131] Heilbron, 'The Earliest Missionaries', 224.

[132] See, Jordan, 'Quantenphysicalische Bemerkungen zur Biologie und Psychologie'; idem, *Die Physik und das Geheimnis des organischen Lebens* ; cf. Richard H. Beyler, 'Targeting the Organism'. More famously, Erwin Schrödinger's *What Is Life*? (1944) inspired many physicists to take up molecular biology, and may even have played a significant role in the discovery of the double helix structure of the DNA molecule. See e.g. Robert Olby, *The Path to the Double Helix*; cf. E. J. Yoxen, 'Where Does Schroedinger's "What Is Life?" Belong in the History of Molecular Biology?'

When it comes to the metaphysical dimension of disenchantment the Copenhagen physicists were more ambivalent. On the one hand, their official stance was one of instrumentalism and positivist anti-realism. They claimed to eschew metaphysics, mimicking the intellectually fashionable rhetoric of the Vienna circle.[133] On the other, however, the physicists utterly failed to convince the Vienna circle philosophers and seem at times to slip down the slope from radical epistemological reflections to *de facto* metaphysical claims about the nature of reality and the (un)reality of nature.[134] Again Jordan provides the most extravagant example: the attempted annexation of biology and psychology led him not only to defend a quantum-based vitalism, including speculations on Lamarckian evolution, but he also explored the possibilities for explaining telepathy and clairvoyance through a synthesis of quantum mechanics and psychoanalysis.[135] Supporting Nazi ideology, "Germanic" culture and *Lebensphilosophie* in the 1930s, Jordan was to a much larger degree than the other Copenhagen natural philosophers part of what might be called a particularly German "holistic milieu"[136] in

[133] Cf. Martin Puchner, 'Doing Logic with a Hammer: Wittgenstein's *Tractatus* and the Polemics of Logical Positivism'.

[134] See the many articles and short comments on various aspects of quantum mechanics in *Erkenntnis* 5.1 (1935). The Vienna circle positivists found Jordan's metaphysical ideas and excursions into vitalism particularly preposterous, as evinced by six essays and communications dealing with his work, including comments by Moritz Schlick, Otto Neurath, and Hans Reichenbach.

[135] Jordan's quantum mechanical defence of vitalism was also attacked in *Erkenntnis* in 1935; see Edgar Zilsel, 'P. Jordans Versuch, den Vitalismus quantemechanisch zu retten'. Jordan's views on parapsychology were published in 1936 in *Zentralblatt für Psychotherapie*, with the title 'Positivistische Bemerkungen über die parapsychologischen Erscheinungen'.

[136] The term "holistic milieu" has in recent years been used to denote networks connecting various types of alternative spirituality in the West that tend to emphasise "holistic" worldviews, "holistic" medicine, and "holistic" science. See e.g. Paul Heelas & Linda Woodhead, *The Spiritual Revolution*; Heelas, 'The Holistic Milieu and Spirituality'. The rhetoric in German culture preceding and during the Nazi period, including in the so-called "new German medicine" (emphasising e.g. "traditional" herbal remedies over and against "materialistic" [and, moreover, "Jewish"] science-based medicine), the "deutsche Physik"-movement, and organicism and holism in biology, psychology, as well as in social and political theorising, has several points of connection with the contemporary holistic milieu when it comes to the cultural rhetoric and projected views of "the West", "Western science", "materialism", "reductionism", and so on. While applying this term to the German Nazi period is not meant as a guilty-by-association argument against these contemporary practices, one cannot deny that a comparison highlights some very

science, with obvious metaphysical interests. Jordan also seems to have been an originator of some of the common "mystical" and "spiritual" connotations of quantum mechanics when he claimed that the problematic measurement process of quantum phenomena not only implied a fundamental uncertainty due to intervening with the objects observed, but that the act of observation itself *created* those phenomena.[137] Varieties of this claim, which advances from pure empiricism to imply a subjective idealist metaphysics, has later become extremely wide-spread in "New Age" interpretations of quantum mechanics.[138] While they may not have taken the explicit form of a new metaphysics in Jordan's own writings, we recognise a considerable tension with the metaphysical scepticism of the disenchanted view.

The Esoteric Connection (I): Creating Emic Historiographies

I have already noted that the presence of an anti-modern, romantic, Weimar republic Zeitgeist is not enough to explain the interpretations of quantum mechanics that were created in this period: other contexts must also be explored. One additional context that has yet to be explored systematically is the presence of *esoteric* discourse in and around the articulations of quantum mechanics.[139] As documented by historians such as James Webb and Nicholas Goodrick-Clarke, esoteric and occult ideas blossomed in the cultures of the Weimar republic and the early Third Reich, and influenced the political and cultural establishments of the era. [140] There is, in other words, an undeniable esoteric dimension to the cultural "zeitgeist" that Forman uses to explain the emergence of quantum mechanics.

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interesting and suggestive cultural affinities. See e.g. Anne Harrington, *Reenchanted Science*; for Jordan's place in this broader cultural-scientific milieu, see Richard E. Bayler, 'Targeting the Organism', 252-253.

[137] Jordan, 'Quantenphysicalische Bemerkungen zur Biologie und Psychologie', 228. Cf. Jammer, *Philosophy of Quantum Mechanics*, 161-162. The idealistic tendencies of some quantum physicists and cosmologist of this period was also criticised by the Vienna circle; see e.g. Philipp Frank, 'Zeigt sich der modernen Physik ein Zug zu einer spiritualistischen Auffassung?' See also my discussion of "quantum mysticism" in chapter seven.

[138] E.g. Amit Goswami, *The Self-Aware Universe*; Deepak Chopra, *Quantum Healing*.

[139] "Esotericism", "the esoteric", and "esoteric discourse" are problematic terms that have been used in a variety of ways in academic scholarship. I will discuss this concept at some length in chapter ten. Cf. Hanegraaff, *Esotericism and the Academy*.

[140] See e.g. Webb, *The Occult Establishment*; Goodrick-Clarke, *The Occult Roots of Nazism*.

What was the precise significance of this esoteric dimension for new articulations of science in the period? I argue that it was first and foremost important for the creation of emic historiographies, positioning science in narratives that dissociated it from a cold-hearted and mechanistic "West" imagined by Occidentalist discourse. As Forman noted, the Spenglerian vision of science was that it should return to its 'spiritual home': 'the fate and the salvation of physics [was] a reunification of thought and feeling, a self-discovery of physics as a fundamentally religious-anthropomorphic expression'.[141] Forman also gave rich quotations from lectures and papers by leading physicists, showing how a yearning for the 'spiritual home' of Western science manifested precisely in references to historical esoteric discourses. For example, Forman quotes Richard von Mises in his introductory lecture at the Technische Hochschule in Dresden in 1920, talking about 'new intuitions of the world' – implying among other things that atomic physics has once again taken up 'the question of the old alchemists' – and that 'numerical harmonies, even numerical mysteries play a role, reminding us no less of the ideas of the Pythagoreans than of some of the cabbalists.'[142] A similar appeal to the mysterious and enchanted past of science is found in Arnold Sommerfeld's public address to the Bavarian Academy of Sciences in 1925, where the impenetrable new mathematical foundations of physics were given a spiritual flare:

> hand in hand with this turn toward the arithmetical goes a certain inclination of modern physics towards Pythagorean number mysticism. Precisely the most successful researchers in the field of theoretical spectra analysis – Balmer, Rudberg, Ritz – were pronounced number mystics … If only Kepler could have experienced today's quantum theory! He would have seen the most daring dreams of his youth revitalized.[143]

These exclamations are primarily to be seen as expressions of an extravagant and positive "orientalising" rhetoric.[144] The choice to throw science in an "esoteric" light

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[141] Forman, 'Weimar culture, causality, and quantum theory', 37. Cf. Spengler, *The Decline of the West*, 427-428

[142] Von Mises quoted in Forman, 'Weimar culture, causality, and quantum theory', 49.

[143] Sommerfeld quoted in ibid., 50.

[144] Cf. Gerd Baumann, 'Grammars of Identity/Alterity', 25-27; Hanegraaff, *Esotericism and the Academy*, 374-375.

to a broader audience reveals something important about the cultural *positioning* scientists were aiming to achieve. We notice in this positioning, and particularly in the strategic use of history that it employs, the beginning of the kind of "emic historiography of science" that casts modern science as returning to an "enchanted" past. References to alchemists, Pythagoreans, and cabbalists appear to be used precisely to counter the view of science epitomised by the disenchanted perspective: it appears important for these physicists to show that science is more than the summation and systematisation of cold facts, that it does not bespeak a deterministic and nihilistic world. On the contrary, science is thought to open the door for something deeply meaningful, even numinous. Intriguingly, this identity is hinted at by connecting science with the popular memory of pre-modern, "occult science", as if a reference to knowledge that has historically been "rejected" by the establishment would help placing science in a better public light in a culture that was sceptical of the "Western modernity".[145] This strategy is found far beyond Weimar culture. In the context of radioactivity, an alchemical discourse playing on the same strings appeared about a decade before the Great War. In the German case more than in the Anglo-American one, however, the historical perspective that emerges bears a striking familiarity with the "re-enchantment paradigm" of the latter part of the 20th century, which we discussed in chapter two.

My conclusion is that this kind of emic historiography of science, which has later become central to new religious and popular discourses on science, has its roots in inter-war scientific discourse, especially in the attempts of scientists to reframe their profession as "culture", and distance themselves from easy associations with a "disenchanted worldview" where science merely plays a utilitaristic role, connected to industry, finance, and the military.[146] Considering this ambition it is ironic that the atomic physics made possible by radioactivity and quantum theory would soon be at the

[145] The logic here is that of a partial and strategic *inversion* of the narrative of "rejected knowledge" that has recently been described by Hanegraaff as constituting an important dimension of the construction of identity for Western academic culture. Cf. Hanegraaff, *Esotericism and the Academy*, esp. 153-256.

[146] For the influence of this sort of thinking on post-war physics, see David Kaiser, *How the Hippies Saved Physics*. It is notable that the inter-war origins of central features in this emic historiography was overlooked by John Brooke and Geoffrey Cantor, who delivered a strong attack on the historiography of New Age science. See Brooke & Cantor, *Reconstructing Nature*, 75-105.

foundation of the largest military science program ever produced: the Manhattan Project.

The Esoteric Connection (II): Conceptual Developments

In addition to forming a basis for new historical narratives emphasising opposition to "disenchanted" science, what other relations do we find between esoteric discourse and new articulations of science? We have no evidence of leading figures being directly involved with explicitly esoteric groups. The popular writings of quantum physicists of the period did, however, supply materials that were ripe for esoteric interpretations, and would lead to the creation of new esoteric concepts. Bohr did at times see himself as a kind of prophet of an emerging religion of complementarity, while Jordan linked quantum physics not only to vitalism, but to the "occult" faculties of clairvoyance and telepathy as well.[147] After coming under fire from sceptical colleagues, however, Bohr felt the need to explicitly repudiate 'mysticism, antirational vitalism, and acausality construed in favor of spiritualism' during a conference in 1936, sponsored by the Vienna circle.[148]

Bohr's disciples were less discreet. The attempted marriages of quantum mechanics with psychoanalysis and analytical psychology by both Jordan and Pauli did spawn something close to new esoteric conceptions.[149] Both of these children of the Copenhagen spirit went into psychoanalysis,[150] and both had contact with Carl Gustav Jung, discussing the connections between complementarity and the psychoanalytic process. The collaboration between Jung and Pauli, which culminated in their co-authored *Naturerklärung und Psyche* in 1952, is the better known and influential example.[151] In their book, the physicist and the psychoanalyst came together around the concept of *synchronicity*, which Jung had started to develop in a less systematic fashion

[147] Heilbron, 'The Earliest Missionaries', 223, 216.

[148] Ibid., 218-219.

[149] See ibid., 226-229; cf. Gieser, *The Innermost Kernel*.

[150] Heilbron, 'The Earliest Missionaries', 226-227.

[151] The volume consisted of two essays, one written by Jung and one by Pauli. See Jung, 'Synchronizität als ein Prinzip akausaler Zusammenhänge'; Pauli, 'Der Einfluss archetypischer Vorstellungen auf die Bildung naturwissenschaftlicher Theorien bei Kepler'. For a critical assessment of the Jungian reading of the Kepler and Fludd debate which Pauli offered in his chapter by a professional historian of science, see Robert Westman, 'Nature, Art, and Psyche'.

in the late 1920s.[152] The basic concept that "synchronicity" tried to capture was the experience of "meaningful coincidence". These were described as relations between certain "inner" states of mind and "outer" events that seemed to reflect them, or as a sudden clustering of similar occurrences in a short temporal period, appearing meaningful in light of entirely personal experiences. Judging from his own clinical practice, Jung found experiences of synchronicity to be very common. But what to make of them? As amazing and meaningful as they were, Jung reasoned that such correlations could clearly not be due to any type of causal relation, for example through some mysterious force, law, or mental capacity that directed things to the right place at the right time. Something of that sort had, in fact, been suggested by the Austrian zoologist Paul Kammerer (1880-1926). After compulsively writing down all meaningful coincidences that happened to him, Kammerer formulated a "law of seriality", and posited the existence of a gravity-like "force", attracting "likes" in some mysterious fashion.[153] Jung cited Kammerer's concept, but took a different path by describing synchronicity as a completely 'acausal connecting principle'.[154]

Jung's concept first appeared in print in a foreword to Richard Wilhelm's translation of the Chinese *I Ching* in 1930, where he sought to define the *modus operandi* of its divination practice.[155] Jung claimed that synchronicity was a way of organising events and experiences that was fundamental to what he called 'Chinese science', and, moreover, completely different from that of 'Western science'. While the Western mentality ordered and correlated events based on temporal timelines driven by causality, Chinese "science" was based on simultaneity, and the correspondence between those qualities that present themselves simultaneously.[156]

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[152] It first appears in seminar notes from 1928 discussing the difference between "Western" and "Oriental" ways of thinking. See Gieser, *The Innermost Kernel*, 277. For an English translation of Jung's more mature article on synchronicity, see Jung, *Synchronicity*.

[153] For a discussion of Kammerer's theory, see Arthur Koestler, *The Roots of Coincidence*, chapter three. Koestler also wrote a scientific biography of Kammerer. See Koestler, *The Case of the Midwife Toad*.

[154] Jung, *Synchronicity*, 8-10.

[155] For the popular English version, see Wilhelm & Carl Barnes (trans.), *The I Ching or Book of Changes*. The first English edition was published in two volumes in 1950. The more popular single-volume third edition was published in 1967, amidst the peak of the countercultural movement of the 1960s. Cf. Michael Fordham, 'Editorial Preface', vii.

[156] Jung, 'Foreword'; cf. Gieser, *The Innermost Kernel*, 277-279.

The collaboration between Jung and Pauli only begun in 1948, and thus after the period that concerns us here.[157] It is nevertheless pertinent to mention it, since the episode reflects a tendency already present in the culture surrounding the development of quantum mechanics before WWII, building on the conceptual foundations formed in that context. The significance of Jung and Pauli's collaboration is precisely that synchronicity is one of few new esoteric concept to emerge out of the 20th century, representing an innovation, perhaps, of the old doctrine of correspondences and related notions of pre-established harmony.[158] What is significant for us here is that Pauli's increasingly broadening understanding of acausality and complementarity in physics contributed to the shaping of this esoteric concept. Pauli informed Jung about the latest science, worked to refine the psychoanalyst's understanding of it, and moved him in the direction of aligning the concept more closely with physics. This influence was duly noted by Jung, who could draw on Pauli's input when concluding his essay with a reflection on synchronicity's relevance for 'the scientific worldview'.[159]

While Pauli would remain critical of Jung's understanding of quantum mechanics,[160] he could at least grant this much: in the same way as the acausality of individual events in the micro-world disappears in statistics, and deterministic "classical" mechanics takes over, the unique and special *meaning* of synchronistic events similarly cannot be captured by statistical methods. Meaning is a property that disappears with quantity. The most important case for this, made by both Jung and Pauli, concerned parapsychology.[161] Jung spent a substantial part of his 1952 essay on synchronicity explaining how the experiments of J. B. Rhine at Duke University on

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[157] For a description of the development of this collaboration, based on Jung and Pauli's letter correspondence, see Gieser, *The Innermost Kernel*, 281-298. The two had, however, been in correspondence for a decade and a half, since 1932. For a published version of their correspondence, see Mayer (ed.), *Atom and Archetype*.

[158] For a concise overview, see Jean-Pierre Brach & Wouter Hanegraaff, 'Correspondences'.

[159] Jung, *Synchronicity*, 89-103.

[160] Cf. Gieser, *The Innermost Kernel*, 283-284.

[161] Pauli even kept contact with the German parapsychologist Hans Bender, whom he met and discussed the parapsychological relevance of synchronicity with in 1957. See Gieser, *The Innermost Kernel*, 285. For both Jung's and Pauli's views on parapsychology, see e.g. ibid., 284-287, 291. See also my discussion in Part Three, especially the conclusion to chapter eight.

effects of "extra-sensory perception" could be seen in light of synchronicity.[162] The fact that mechanistic accounts of telepathy and clairvoyance had not proved fruitful opened the possibility that something genuinely "acausal" and synchronistic was going – as if the minds of the "reader" and the "sender" in a telepathy experiment did not really *communicate* with each other, but rather *corresponded* in thoughts and mental images. Jung made similar arguments for various mantic techniques, especially the *I Ching*, as we have seen, but also for astrology. Though Pauli was far from impressed by this particular use of the concept,[163] Jung himself included a series of experiments on astrology as part of his case for synchronicity.[164] However, they both agreed that if these phenomena were truly synchronistic, one would have a case against the very attempt to capture their effects by scientific research using statistical tools. The synchronistic effect is by definition particular and unique. When one goes about adding greater quantities of cases, the effect will disappear.[165]

This case is important for analysing the relations between science and esotericism, for two reasons. First, it is not unreasonable to interpret Jung as an esoteric thinker. As Wouter Hanegraaff has argued, he may be seen as someone who attempted to revive German romantic *Naturphilosophie*, and with it a way of approaching nature which bears several strong points of resemblance to early modern esoteric discourse.[166] In addition, of course, there is Jung's re-invention of "spiritual alchemy", his fascination with "the East", the *I Ching*, astrology, and parapsychology, not to mention the exceptional revelatory works he wrote, including the only recently published *Red Book*, or *Liber Novus*.[167] Secondly, the concept of synchronicity is a central part of Jung's esoteric trajectory. With it, and through Pauli's scientific input, a supra-rational, analogical, non-causal structure is admitted back into the conception of nature.

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[162] Jung, *Synchronicity*, 14-19, passim.

[163] As Suzanne Gieser writes, 'Pauli's attitude to astrology was very negative. He could accept the Chinese oracular method I Ching and was open to parapsychological phenomena. But astrology was anathema to him.' Furthermore, he considered Jung's experiments with astrology to be 'unnecessary and … only encouraged a lot of erroneous interpretations by believers in astrology who saw Jung's experiment as support for astrology.' Gieser, *The Innermost Kernel*, 298.

[164] Jung, *Synchronicity*, 43-68.

[165] Ibid., 64-66; cf. Gieser, *The Innermost Kernel*, 285.

[166] E.g. Hanegraaff, *New Age Religion*, 497; cf. idem, *Esotericism and the Academy*, 277-295.

[167] Jung, *The Red Book*.

Synchronicity suggested a program for interpreting nature in ways that resemble the old doctrine of correspondences, allowing for nature to be *read* rather than *measured*. Embedded in the Jungian psychoanalytic process the experience of synchronicity also becomes a key event in what could be seen as a *soteriological* programme – a quest for the purification and transmutation of the soul through the "integration of personality".

Jung and Pauli were certainly not alone in developing a dialogue between modern physics and esoteric thought. We have already seen that quantum physicists of the Copenhagen persuasion did much to forge the foundation of an "emic historiography of science" emphasising a radical break between "classical" and "modern" science, while attempting to build a bridge between modern science and pre- and early-modern natural philosophies, as well as "Eastern" philosophical ideas. But these trends were not exclusive to the Copenhagen school: the 'enthusiastic resignation' and philosophical expansionism was also followed up on by some of the original enemies of the Copenhagen interpretation, arguing the relevance of the field not only for biology, psychology and philosophy, but for religion and mystical though as well. Erwin Schrödinger's later work is a case in point: the Austrian physicist spent the epilogue of his highly influential book, *What Is Life?*, speculating on the problems of free will and consciousness. Referring to the 'great Upanishads' and 'the scholars of Vedanta' Schrödinger was ready to suggest that the identification of the "I" of consciousness with a unitary, single whole, a universal consciousness permeating the universe, was the only logical solution to the apparent discrepancy between the knowledge that the organism is a mechanism, and the undeniable feeling of controlling one's own body and determining one's own actions through will.[168]

* * *

These notable cases lead us to the final conclusion of this chapter: also when it comes to the *substantial* level of developing new areas of esoteric speculation based on modern physical science, the foundation was laid by leading physicists. Some of these conceptual foundations have proved more durable than others: while the modern alchemy discourse of radioactivity largely disappeared after World War Two, the speculative ideas of Pauli, Jordan, and Schrödinger are still very much alive in contemporary

[168] Schrödinger, *What Is Life?*, 88-92, 89. It is significant that Schrödinger ends his epilogue by noting a correspondence between his own view and that of Aldous Huxley in *The Perennial Philosophy*.

"quantum mysticism". However, this observation comes with an important *caveat* that points the direction to later chapters. As Heilbron has noted, after an intense speculative development in the 1920s and early 1930s, the 'assessment of the grander implications of atomic physics passed quickly to philosophers and theologians':[169]

> The immense literature that they created during the 1930s has yet to be surveyed. This much, however, can be said. Few who examined the implications had read Bohr or could tell complementarity from indeterminism. Most obtained their information from the popularizations of Planck and A. S. Eddington, the first opposing and the other promoting the doctrine and consequences of acausality. Where physicists disagree about fundamentals, philosophers may feel safe in their own opinions. [170]

Heilbron made his evaluation in 1985, but not much has happened in the direction of exploring this uncharted territory since.[171] In chapter six I shall make a modest contribution by turning to the question of how popularisers of science, together with scientists and scholars in several fields, continued to co-create a number of "new natural theologies", some of which have become foundational for post-WWII discourses on science, religion, and "mysticism".

[169] Heilbron, 'The Earliest Missionaries', 229-230.

[170] Ibid., 230.

[171] The most notable exception is Peter Bowler, *Reconciling Science and Religion*.

5

The Meaning of Life:
Mechanism and Purpose in the Sciences of Life and Mind

> The problem of the relation between mechanism and purpose is of profound theoretical interest. It is the most fundamental of the great perennially disputed problems. And, unlike some other of the great unsolved problems, it is also of far-reaching and profound practical importance. The kind of answer we give to the question affects in a multitude of ways the conduct of our lives, the form and working of all our institutions, our science, our law, our politics, our economics, our morals, our religion.
>
> William McDougall, 'Mechanism, Purpose and the New Freedom' (1934), 5.

INTRODUCTION

The previous chapter has shown that even the "hardest" of the natural sciences produced a broad range of possibilities for answering the problem of disenchantment during the first decades of the 20th century. As the present chapter will demonstrate, the problem became even more explicit in the "softer" sciences of life and mind. In disciplines such as physics and chemistry it had remained a discussion largely about how to *interpret* scientific theories; in biology and psychology, the problem of disenchantment came to concern the very theoretical and methodological foundations of the disciplines. Dealing with animal and human subjects, the life and mind sciences ran into much more complex questions than the fundamental sciences of physics and chemistry. How to account for the emergence of complex organisms and minds? How to resolve the apparent tension between what seems an irreducible teleological directedness present in the activity of minded subjects and the supposedly mechanistic and law-governed material universe of which they are part?

If the prototypical example of an enchanted worldview is one populated by capricious *agents*, such as spirits, demons, or fairies, then the disenchantment of the

world would not be complete until one has disenchanted life itself, and obliterated the final possibility of self-determined, non-mechanical, teleological agency from the workings of the world. The place for doing so would be in the interface between biology, psychology, and philosophy. It is to early 20th century debates in this field we shall turn next, through an interrogation in four steps. First, we revisit the situation at the close of the 19th century, through a discussion of the relation between minds and bodies as envisioned by the scientific naturalist T. H. Huxley, drawing on a stream of thought going back to Cartesian natural philosophy. Second, we shall look at scientific reactions to "the disenchantment of life" at the beginning of the 20th century, and the enunciation of the new positions of vitalism and organicism/holism within the scientific discourse of embryology. Thirdly, we move to the fledgling discipline of psychology, where the problem of mechanism and teleology, and the reducibility of mind, became a site for intense scientific controversy amidst the rise of behaviourism in the second decade of the century. Finally we turn to the question of evolution, and consider a range of propositions in evolutionary theory of the early century – a period which has sometimes been dubbed "the eclipse of Darwinism" for the uncertainty that reigned in the field.

1 The Disenchantment of Life until 1900

The largely disenchanted worldview promulgated by Victorian scientific naturalism was to a considerable extent built on 19th century advances in biology. As we saw in chapter two it was biologists such as Thomas Henry Huxley who were most eager to produce and disseminate it. Based on the advances in evolutionary theory as well as physiological approaches to the human mind, the "New Nature" of the Victorian naturalists presented an ontology of monistic materialism. With the mind nailed to the brain, and the brain placed in historical sequence through a process of natural selection that had no use for concepts of directedness, design, striving, or will, it seemed one could finally get rid of troubling dualisms between the material and the mental, and leave mysterious unaccountable factors connected to teleology completely out of the equation.

A closer look at Huxley's widely publicised views is helpful for understanding how connections between living beings, minds, and questions of free will and agency were theorised among the Victorian naturalists. Huxley's most succinct and thorough

discussion of the problems of mechanism, life, and consciousness was put forward in the essay entitled 'On the Hypothesis That Animals are Automata', first published in *Nature* in 1873. Although this makes it a relatively early piece, it is worth noting that Huxley, in the foreword to the first volume of his *Collected Essays* from 1893, wrote the following concerning the earlier articles:

> so far as their substance goes, I find nothing to alter in them … . Whether that is evidence of the soundness of my opinions, or of my having made no progression in wisdom for the last quarter of a century, must be left to the courteous reader to decide.[1]

It seems safe to assume that the views expressed were at the very least scientifically durable enough to still be considered relevant expressions of naturalistic thought at the close of the 19th century.

Huxley's essay is, in essence, a new reading of Descartes' hypothesis, advanced in *Discours de la méthode* (1637), that animals are devoid of souls, sensation, emotion, thoughts, or any other conscious activity – in short, that they are automata working solely on reflex-action.[2] Huxley largely defends this viewpoint, showing in great detail how contemporary biology and physiology bear out the main points through new experimental evidence. Huxley argues for a *consolidation* of earlier mechanistic and materialistic theories of life and mind with new biological science:

> in the seventeenth century, the idea that the physical processes of life are capable of being explained in the same way as other physical phenomena, and, therefore, that the living body is a mechanism, was proved to be true for certain classes of vital actions; … having thus taken firm root in irrefragable fact, this conception has not only successfully repelled every assault which has been made upon it, but has steadily grown in force and extent of application, until it is now the expressed or implied fundamental proposition of the whole doctrine of scientific Physiology.[3]

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[1] T. H. Huxley, 'Preface', vi.

[2] For a discussion of the complexities of mechanistic natural philosophy following Descartes (and in particular the distinction between *ontological* and merely *methodological* uses of mechanism), see Dennis Des Chene, 'Mechanisms of Life in the Seventeenth Century'.

[3] Huxley, 'On the Hypothesis That Animals Are Automata', 199-200.

Huxley continues to reiterate a number of theses set forth by Descartes, showing how these had later been confirmed and become part of scientific orthodoxy. Thus, for example, on the nature of consciousness:

> Modern physiology, aided by pathology, easily demonstrates that the brain is the seat of all forms of consciousness … . It proves, directly, that those states of consciousness which we call sensations are the immediate consequent of a change in the brain excited by the sensory nerves; and, on the well-known effects of injuries, of stimulants, and of narcotics, it bases the conclusion that thought and emotion are, in like manner, the consequents of physical antecedents.[4]

The latter is a significant formulation: that conscious events are consequents of physical antecedents means that they have no causal power, but are themselves caused by non-mental physical events. Supporting the argument with evidence of what happens to frogs when one removes parts of their brains, Huxley concluded that if Descartes had 'been acquainted with these remarkable results of modern research, they would have furnished him with far more powerful arguments than he possessed in favour of his view of the automatism of brutes'.[5]

There was, however, one major point on which Huxley disagreed with Descartes, and that concerned the relation between "brutes" and human beings. Pointing to his strong belief in the continuity of nature as the main reason, it did not seem plausible to Huxley that humans should have consciousness while other animals did not. At the same time, he was not prepared to deny consciousness in human beings, so the conclusion had to be that there was, after all, some kind of conscious activity at play in the animal kingdom. Arguing from the point of view of evolutionary theory, it seemed likely that this trait had developed gradually, and not by a sudden jerk separating the lower animals from the higher forms.[6]

Saving consciousness in animals did not, however, mean disregarding them as automata. Instead, Huxley describes animals as 'conscious machines'.[7] Conscious activity, including sensations, desires, even the feeling of free will and choice, are merely

[4] Ibid., 205-206.

[5] Ibid., 225.

[6] Ibid., 236-237.

[7] Ibid., 238.

'the consequents of physical antecedents'. In terms of the philosophy of mind, this is a prototypical expression of *epiphenomenalism* about consciousness, meaning that the mind is an inconsequential by-product of more fundamental processes, which are themselves not affected in any way by their by-product. In Huxley's own formulation, with an appropriate industrial-age analogy:

> The consciousness of brutes would appear to be related to the mechanism of their body simply as a collateral product of its working, and to be as completely without any power of modifying that working as the steam-whistle which accompanies the work of a locomotive engine is without influence upon its machinery. Their volition, if they have any, is an emotion indicative of physical changes, not a cause of such changes.[8]

Huxley claims, however, to be able to save free will, but only by radically redefining it. Defining freedom in terms of the absence of *external* hindrances, Huxley considers a "conscious machine" such as a greyhound to possess free will if it is able, for example, to chase a hare (based on its purely mechanical responses to desires that have an equally mechanical basis) without being restrained by a device such as a rope tied to a stick. But volition *as such* is merely a feeling, a state of consciousness, which accompanies material changes in the body (primarily in the nervous system). It is not itself part of any causal chains in nature:

> Much ingenious argument has at various times been bestowed upon the question: How is it possible to imagine that volition, which is a state of consciousness, and, as such, has not the slightest community of nature with matter in motion, can act upon the moving matter of which the body is composed, as it is assumed to do in voluntary acts? But if, as is here suggested, the voluntary acts of brutes—or, in other words, the acts which they desire to perform—are as purely mechanical as the rest of their actions, and are simply *accompanied by* the state of consciousness called volition, the inquiry, so far as they are concerned, becomes superfluous. Their volitions do not enter into the chain of causation of their actions at all.[9]

[8] Ibid., 240.

[9] Ibid., 241. Emphasis added.

If epiphenomenalism is the most plausible position on the mental life of brutes, then what about human beings? Drawing the line of argument to its conclusion, Huxley makes clear that there is no reason why things should be any different for civilised Victorian bipeds:

> It seems to me that in men, as in brutes, there is no proof that any state of consciousness is the cause of change in the motion of the matter of the organism. If these positions are well based, it follows that our mental conditions are simply the symbols in consciousness of the changes which take place automatically in the organism; and that, to take an extreme illustration, the feeling we call volition is not the cause of a voluntary act, but the symbol of that state of the brain which is the immediate cause of that act. We are conscious automata, endowed with free will in the only intelligible sense of that much-abused term—inasmuch as in many respects we are able to do as we like—but none the less parts of the great series of causes and effects which, in unbroken continuity, composes that which is, and has been, and shall be—the sum of existence.[10]

Huxley's vision bears the semblance of a Victorian reworking of Julien Offray de La Mettrie's 18th century mechanistic philosophy of man, enforced with the discoveries of natural selection and experimental physiology.[11] This combination of mechanistic philosophy and epiphenomenalism, and its extension from the special case of non-human animals to humanity itself, represents the full disenchantment of life. To the extent that this was the view of scientific naturalism at the turn of the 19th century, it illustrates the complete explicit embrace of disenchantment – at least in its epistemological dimension. Nothing upsets the mechanical order of nature, not even the apparent exercise of will on behalf of conscious agents.

2 THE RE-ENCHANTMENT OF LIFE FROM 1900

THE MEANINGS OF MECHANISM

The life sciences at the turn of the 20th century were clinging to a largely "disenchanted" identity, expressed through a mechanistic conception of life, and an epiphenomenalist theory of mind. As was the tendency in other fields of natural science, the Victorian

[10] Ibid., 244.

[11] La Mettrie, *L'homme Machine* (1748).

perspective was, however, challenged throughout the early decades of the 20th century. One of the basic elements that were being contested was the notion of mechanism itself. On a variety of grounds, from the purely scientific context of laboratory research, to the philosophical and even religious contexts of worldviews and the place of human beings in nature, theoretical alternatives to the mechanistic conception of life were being sought by scientists. In this section, we shall systematically introduce and explore the main fault lines. Before starting, however, it is necessary to stop and reflect a bit closer on what, exactly, is meant with "mechanism", and what precisely it implies in the context of the life sciences.

Although it has largely been taken for granted so far, mechanism is not a simple and straightforward concept in the history of science. Huxley's narrative of the mechanisation of life comes close to a simplistic view of the triumph of "the mechanistic philosophy" – a view which has often been utilised in emic historiographies of science.[12] In reality, the mechanistic philosophy, even in the early modern period, came in a variety of forms. When it comes to biology it is convenient to distinguish between *philosophical* or *metaphysical* mechanism on the one hand, and a less ambitious *methodological* or *explanatory* mechanism on the other.[13] Explanatory mechanism concerns the step-by-step mechanical explanation of specific biological systems, such as the blood stream, the nervous system, and the hormone system. This methodological attitude must be distinguished from the *metaphysical* view that all aspects of life and organisms are ultimately constituted in ways comparable to machines.[14] As Garland Allen has put it, the explanatory type of mechanism 'is concerned with both the components and activities involved in understanding how something works or how a particular cause leads to a particular effect'.[15] This methodological attitude may easily be applied without subscribing to a more general metaphysical mechanism. Conversely,

[12] See the discussion of Morris Berman and David Ray Griffin in chapter two.

[13] For these discussions, see the 'Mechanisms in Biology' special issue of *Studies in the History and Philosophy of the Biological and Biomedical Sciences* 36. 2 (2005), edited by Carl F. Craver and Lindley Darden. The distinction above is compounded from the articles by Des Chene, 'Mechanisms of Life', and Garland E. Allen, 'Mechanism, Vitalism, and Organicism in Late Nineteenth and Twentieth-Century Biology'.

[14] It is notable that this distinction is already visible in early-modern natural philosophies of life. See Dennis Des Chene, 'Mechanisms of Life'.

[15] Allen, 'Mechanism, Vitalism, and Organicism', 263.

one may easily hold philosophical mechanism to be true without knowing the *specific* mechanisms at every instance. The distinction, as we shall see, becomes important in the biological debates of the period that concerns us here.

We should also point out that whereas metaphysical mechanism has often been uncritically connected with materialism, the two terms are not interchangeable. This case can easily be made with reference to physics: many of the 19th century mechanistic physicists were in fact subscribers to an *idealistic* metaphysic.[16] In early 20th century biology, we observe that it is also possible to be a materialist without subscribing to philosophical mechanism. To see how this is so, we must consider the methodological and epistemological aspects of mechanism a bit closer.

As an *explanatory* principle, mechanism relies on an analytical or reductionist method. Thus in biology, the mechanistic materialist will seek to reduce "higher-level" functions to lower-level realities, and seek an explanation by analysing mechanical interactions on these lower levels. If a mechanistic *metaphysics* is at the base, then this analysis can theoretically be carried all the way down: from the level of the organism as a whole, through the interactions of nervous systems, muscles, blood circulation, and hormone systems, to the level of cells and organelles, to the level of molecules and chemical reactions, to the atomic and subatomic levels. This reduction draws an explanatory arrow from the most fundamental up to the most complex. Ontologically, priority is given to the more "fundamental" disciplines of physics and chemistry. In terms of actual research methods, this leaning may result in the adoption of experimental procedures inspired by, for example, physical chemistry in order to explore the underlying mechanisms of biological functions, such as reproduction and the development of embryos.[17] As we are about to see, it has however been possible to make use of explanatory mechanisms without subscribing to an absolute ontological reduction. Moreover, most philosophically non-mechanists would still remain materialists.

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[16] See Asprem, 'Pondering Imponderables'.

[17] The placement of biological research in the framework of physical chemistry was explicit in some of the most path breaking work of Jacques Loeb, which will be briefly reviewed below. For a detailed analysis of Loeb's career and approach to biology, see Philip J. Pauly, *Controlling Life*; for a condensed view, placed against the context of competing philosophies of biology, see Allen, 'Mechanism, Vitalism, and Organicism', 269-274.

THE ALTERNATIVES AT 1900: MECHANISM – ORGANICISM/HOLISM – VITALISM

Materialistic mechanism was fundamental to Victorian naturalism, and it would become the official line of the "new biology" of the later 20th century. However, in the period between T. H. Huxley's Victorian naturalist proselytising, and the establishment of the "modern synthesis", so-called by Thomas Henry's grandson, Julian Huxley,[18] mechanism was in trouble. During the first three decades of the 20th century, a number of outstanding biologists dismissed the mechanistic and reductionist framework for doing research, while pursuing alternative ways of studying organisms. Particularly among the embryologists, increasing attention was given to what was seen as serious shortcomings of the mechanistic-materialist paradigm that had been driving the discipline. As historian of science Anne Harrington has shown, a range of *holistic* and *vitalistic* alternatives were being proposed, often in strongly polemical terms. The attack was levelled not only at the mechanistic conception of science itself, but also against the trends of "fragmentation" and "materialism" that some claimed to dominate modern culture at large.[19]

In terms of disenchantment, we may frame the three main clusters of positions in these debates in an ascending order from the most "disenchanted" to the most "enchanted". Thus we get mechanistic positions at the most disenchanted end, and vitalistic ones tending towards "enchantment" (in the sense of allowing for mysterious and incalculable vital forces in nature). In between these extremes, we find the cluster of positions known as *organicism* or *holism*. These middle positions rejected the "mysterious forces" of the vitalists, while defending a view of nature that entails the essential incalculability and irreducibility of organisms. The three clusters thus represent different epistemological positions. This is of fundamental relevance to their place within the life sciences, because the three positions also yield quite different answers to the most fundamental question of what life really is. Moreover, the three positions had direct implications for laboratory research.

Materialistic mechanism is, as we have seen, the view that living things can be understood and explained entirely in terms of the mechanical interaction of their constituent parts. The whole is nothing more than the sum of its parts. The phenomena

[18] Julian Huxley, *Evolution: The Modern Synthesis* (1942).

[19] Harrington, *Reenchanted Science*.

of life are subsumed under the wider umbrella of mechanistically explicable and calculable phenomena. On the opposite end of the spectrum stands vitalism. The basic epistemological position of vitalism in early 20th century biology may aptly be summed up by one of its main spokespersons, the embryologist Hans Driesch. In his 1908 work, *The Science and Philosophy of Organism*, Driesch wrote:

> No kind of causality based upon the constellations of single physical and chemical acts can account for organic individual development; this development is not to be explained by any hypothesis about configuration of physical and chemical agents. Therefore there must be *something else* which is to be regarded as the sufficient reason of individual form-production.[20]

The vitalist holds that this "something else" is entirely separate from ordinary matter. It represents a mysterious and incalculable force, an irreducible vital force that drives the development of organisms and explains life as a phenomenon entirely *sui generis*. In the case of Driesch, the vital force was defined as his principle of *entelechy*, described in decidedly anti-mechanistic, anti-materialist, and anti-reductionist terms.[21] Entelechy was an immaterial organising and directing force, which consumed no energy while still possessing some mysterious agency in the development of organisms. It was understood as operating in a teleological and goal-directed rather than mechanistic manner, gradually expressing its inherent potential through the evolution of species and the growth of individual organisms.

Rejecting mechanism and holding that life must be understood with recourse to something non-material, this position stands in stark contrast to the disenchanted perspective. That Driesch's neo-vitalism took a long step in the direction of an enchanted biology becomes even more evident when we see that he would relate it to spiritualism and parapsychology: in his 1908 book, Driesch claimed that it was entirely possible that entelechy could remain active beyond the death of an individual organism, although he would claimed no certainty on the matter.[22] Over the decades that followed, Driesch got more deeply involved with studies of spiritualism and the occult, acting as

[20] Driesch, *The Science and Philosophy of the Organism*, Vol. 1, 142.

[21] Driesch discusses his vitalistic principle of "entelechy" at length in *Science and Philosophy of Organism*, first in Vol. 1, 142-149; then in Vol. 2, 129-265.

[22] Driesch, *Science and Philosophy of the Organism*, Vol. 2, 260-263.

president of the English Society for Psychical Research in the 1920s and working to bring parapsychology on philosophically and scientifically acceptable grounds in Germany.[23] In this context entelechy was suggested as an explanation for various occult faculties and mediumistic phenomena. It is, however, important to note that Driesch's vitalism was developed from his experimental and theoretical work in embryology, and that he only applied it to spiritualism and parapsychology much later.[24] The scientific context in which he first developed it will be discussed shortly.

While the distinction between mechanism and vitalism should be clear, the middle positions of organicism/holism deserve more attention.[25] Philosophically, this is a quite ambiguous cluster of positions, based on the rejection of both mechanism and vitalism. These positions require some extra attention not only because they are philosophically more complex than vitalism, but because they have been much more central in forming actual biological research programmes as well. Organicist reasoning has in fact been much more influential than is generally recognised: celebrated biologists such as Hans Spemann, Joseph Needham, and Richard Goldschmidt all defended organicist views, and formulated specific research programmes on the basis of such views. The contemporary biologist Scott Gilbert and the philosopher of science Sahotra Sarkar have even argued that '[m]any of the principles of organicism *remain* in contemporary developmental biology' to this day, but that they 'are rarely defined as such'.[26] The reasons for this lack of acknowledgement of a living organicist heritage may have to do with the fact that organicism has held rather bad company through the years,

[23] Driesch published several important works in the history of German parapsychology, including 'Der Okkultismus als Neue Wissenschaft' (1923), and the monograph *Parapsychologie* (1932). See also his presidential address to the SPR: Driesch, 'Psychical Research and Established Science' (1926). Driesch's deep involvement with parapsychology, and his impact on its development, will be explored further in Part Three.

[24] His first monograph length defence of vitalism was in his 1905 book, *Der Vitalismus als Geschichte und als Lehre*.

[25] The term "holism" was coined by the Afrikaner military leader, politician and two times Prime Minister of South-Africa, Jan Christiaan Smuts, in his 1926 book, *Holism and Evolution*. Appearing at a time where the philosophical and scientific topics that the book deals with were already well-established, it has succeeded in giving a new name to the general position associated with organicism, emergence, and related currents in the philosophy of science.

[26] Gilbert & Sarkar, 'Embracing Complexity', 1. My emphasis.

and has thus become guilty by association. In addition to being associated with vitalism, which it in fact rejected, stances of organicism and holism have often been linked to political ideologies on the extreme right and left, as well as to various "spiritual" positions urging the re-enchantment of the world. As Gilbert and Sarkar somewhat sardonically remark: 'With ideological friends like these, who needs enemies? The association with such company as vitalism, fascism, communism, and New Age spirituality should be enough to bring down any philosophy.'[27]

What, then, do organicist and holist positions imply, and how are they distinct from vitalism and mechanism? First of all, while dismissive of reductive mechanistic analysis, most organicist positions in biology were still thoroughly *materialistic* in their ontologies. This is the most crucial difference between the organicist and the vitalist: by clinging to monistic materialism, the organicist rejects any mysterious "vital forces". Instead, the organicist is committed to a different kind of irreducibility about life, the main point being that certain biological functions can only be explained on their own level of existence, and hence not reduced to more fundamental realities – whether basic chemistry or fundamental vital forces. In contradistinction to the mechanist, the organicist/holist finds that organisms are *more than the sum of their parts*. As we shall see later, this led to organicism being linked with a whole literature, springing forth in the 1920s in particular, on "emergence" and "emergent properties" – pulling the rabbit out of the hat while insisting there is no magic involved.[28]

While it seems all too easy to link some of these debates about mechanism, organicism and vitalism to broader political and cultural concerns in this period,[29] it is nevertheless important to see that much of it in fact developed from "internal" scientific concerns. To make the point clear, we should have a look at the perhaps most important experimental context of these debates, which is found in the field of developmental embryology. The mechanistic hypothesis faced serious experimental problems in this

[27] Ibid., 5.

[28] I am referring in particular to the school of "British emergentism", the classics of which are Samuel Alexander, *Space, Time and Deity* (1920), two volumes; Conwy Lloyd Morgan, *Emergent Evolution* (1923), two volumes; Charlie Dunbar Broad, *Mind and Its Place in Nature* (1925). This school will be discussed at length in chapter six, where its intimate connection with natural theology will be revealed.

[29] In particular, it is easy to see connections to the Forman thesis and the development of quantum mechanics in the inter-war period. For the science of biology, an interpretation along these lines is found in Harrington*, Reenchanted Science*.

field around the turn of the century. It was to these problem Driesch responded by developing his concept of entelechy. Embryology would also prove to be a context where non-reductionist organicist approaches could be developed to great effect. These debates, now largely forgotten as far as their radical conceptual differences are concerned, have been re-inscribed in a progressive story of modern biology that culminates in the achievements of modern genetics and cloning.

Lessons from Developmental Embryology

The fertilization of the egg by a sperm, and the consequent splitting of the egg and development of the embryo was one of the big mysteries in biology at the end of the 19th century. The process of reproduction was crucial for theories of evolution, and it opened up many fundamental questions: How does inheritance work? What causes it? How does a fertilised egg start splitting, and what governs the development from this simple fusion of cells to a highly specialised organism? The latter question concerns "embryonic differentiation", and it gave rise to a number of experiments from the 1880s and into the 20th century that were connected to different explanatory schemes. Looking at the works of Wilhelm Roux, Hans Driesch, Jacques Loeb, and later Hans Spemann reveals how embryology got connected to mechanistic materialism, holistic approaches, and overt vitalism.

The story begins in the 1880s, when the zoologists August Weismann (1834–1914) at the University of Freiburg, and Wilhelm Roux (1850–1924) of the University of Jena, independently developed the theory that all the information that went into heredity was present in the germ cells – the egg and the sperm – and that no other cells were active in the process of inheritance. This is known as the "germ plasm theory", and would become central to the new versions of Darwinism that were about to be developed, and to the new school of Mendelism.[30] In the formulations by Roux and Weismann the theory also came with certain predictions regarding the development of embryos that could be tested experimentally. According to the theory, it is only the combined germ cells of the newly fertilized egg that carry the complete set of hereditary information. As the cell starts dividing, the information was thought to be distributed to the new cells, thus accounting for the gradual specialisation of cells in the developing

[30] Cf. Bowler, *Evolution*, 237–242. These debates concerning evolution will be discussed at the end of the present chapter.

embryo. This was in essence a mechanistic-materialist theory: the embryo was regarded as a mosaic of the material that was present in the fertilized egg from the beginning. Only a mechanical process of differentiation was needed to account for the further development of the organism.

The mosaic model was tested by Roux in 1888. In his experiments with fertilised frog eggs Roux waited for the first cleavage to happen and then used a hot needle to puncture one of the two cells. The mosaic model predicted that already at this stage, differentiation would have occurred, and half of the hereditary material would be lost with the destruction of one cell. Developing the surviving cell, Roux reported that it had developed into a half-embryo, which seemed to confirm the prediction of the germ plasm theory. On the basis of these results, Roux established a whole subfield entitled *Entwicklungsmechanik*, and a specialist journal by the name of *Archiv für Entwicklungsmechanik der Organismen* (1894). This journal became a rallying point for the mechanistic-materialist view in biology around the turn of the century, and was also the first journal dedicated to experimental embryology.[31]

Roux's mechanistic interpretation of embryonic differentiation did not remain unchallenged for long, however. In 1891, Hans Driesch started experimenting with sea urchin eggs harvested from the bay of Naples. Instead of destroying one of the cells after the first division of the egg, Driesch separated the two by rigorous shaking. In principle, the method of separation should have no bearing on Roux' hypothesis, and one should still expect to see the two eggs develop into half-organisms. However, Driesch found instead that the two cells developed into two complete sea urchin embryos, the only difference being that they were slightly smaller than average. This result seemed to contradict Roux' mechanistic mosaic model: 'No machine could reconstruct the whole out of individual parts'.[32] Building on these results, Driesch would spend the next seven years experimenting with embryos in search for adequate solutions within a mechanistic framework. In the end, however, his efforts were frustrated, and by the beginning of the 20th century, Driesch had formulated a radical vitalistic alternative. In 1899 he published a monograph introducing the non-mechanistic idea of organisms as

[31] Allen, 'Materialism, Vitalism, and Organicism', 270-271.

[32] Ibid., 271.

'harmonious equipotential systems'.[33] Over the course of the coming decades, Driesch left experimental embryology altogether, focusing instead on more philosophical ideas relating to his neo-vitalism. This would eventually take him into a number of other fields, including parapsychology and natural theology.[34]

Meanwhile, Driesch's neo-vitalist interpretation was rapidly outdated by new experimental work that was carried out in embryology. In fact, some of his colleagues would criticise Driesch for having settled with a dogmatic solution that curtailed any further curiosity about what was really going on in embryonic differentiation. One of these critics was Jacques Loeb, who had briefly worked with Driesch in Naples, and would become a strong proponent of a new mechanistic programme following Driesch's turn to vitalism. Loeb initially saw no contradiction between Driesch's results and a mechanistic interpretation, having himself done similar experiments and found the same type of results. His way to show this rested on an innovation of embryological research methods, which enabled him to experiment with artificial parthenogenesis – inducing cleavages in eggs that had *not* been fertilized, by the application of purely chemical and physical agents.[35] If such an artificial parthenogenesis were to be successful, one would be able to direct research towards the specific physico-chemical processes involved in natural fertilisation as well. In short, one would have come one step closer to a purely mechanistic-materialist interpretation of fertilisation – which at that point was still one of the most mysterious events separating living organisms from non-living material entities.

Loeb borrowed methods from physical chemistry, and experimented with exposing unfertilized sea urchin eggs to water with different salt solutions, studying the effects of ionization on the egg. He found that certain solutions would excite the egg to produce the first cleavage, thus initiating a process of parthenogenesis. Thus Loeb was able to show that a purely physico-chemical process could be used to mimic "vital"

[33] Driesch, *Die Lokalisation morphogenetischer Vorgänge, Ein Beweis vitalistischen Geschehens*; cf. Harrington, *Reenchanted Science*, 51.

[34] Driesch's vitalistic position was developed in a number of works of the early 20th century, including *Geschichte des Vitalismus* (1905), but most notably *The Science and Philosophy of Organism* (1908) based on his Gifford Lectures. Driesch's strongest contribution to parapsychology came in his 1932 *Parapsychologie: Die Wissenschaft von den "Okkulten" Erscheinungen*. As we shall see in part III, this book had some influence on the development of scientific parapsychology, particularly in Germany.

[35] Allen, 'Mechanism, Vitalism and Organicism', 272.

processes, and produce, in the laboratory and under strict control by the scientist, completely fatherless sea urchin embryos.[36] This research suggested that even the most mysterious vital processes could in principle be reduced to physics and chemistry. Furthermore, the phenomena of reproduction could be brought under complete human control.[37]

Loeb's approach was thoroughly mechanistic, in both a philosophical and a methodological sense, and it would become exemplary of a new paradigm for biological research in the 20th century that came out strongly against any non-mechanistic tendency.[38] But in the meantime, a number of *organicist* approaches were also advanced, representing a non-mechanistic programme that lead to much more fruitful research than Driesch's vitalism had done. Although organicism was argued on a number of grounds, ranging from purely operative concerns of experimentation to abstract philosophical matters, we should presently continue with one last example springing out of practical considerations of embryology research. This example is found in the work of Hans Spemann (1869–1941), who was eventually awarded the 1934 Nobel Prize in physiology and medicine for his work.

Spemann took up research in embryology in the late 1890s, but conducted it along a different path than had Roux, Driesch, and Loeb. His distinctly organicist approach would lead to significant results in the 1920s when, together with his PhD student Hilde Proescholdt (later Mangold), he experimented with the phenomenon Spemann termed "induction".[39] The process may be described simply as follows: By intervening in a developing embryo, removing tissue from one part of the embryo and transplanting it somewhere else, Spemann discovered that one could change the direction in which a certain region of the embryo developed. The natural course of embryonic differentiation could be altered by laboratory "induction". In earlier work, for example, Spemann had experimented with the differentiation of eye lenses in the embryo of frogs. When he removed the optic vesicle (growing out of the neural tube)

[36] Ibid., 237.

[37] The ideal of *engineering* and human control and manipulation was central to Loeb's programme, as demonstrated by Pauly, *Controlling Life*.

[38] On the denial and rejection of non-mechanistic approaches in biology, see Gilbert and Sarkar, 'Embracing Complexity'.

[39] For a brief overview, see Allen, 'Mechanism, Vitalism and Organicism', 276-279.

and transplanted it to the back of the embryo, this region would suddenly start producing lenses. Specialised cell tissue was shown to have the property of inducing other "lower-level" cells to develop in a different and more specialised way than they would if they had *not* come in contact with the inducing cells. In the work with Proescholdt, Spemann tried to determine whether there was one master inductive process early in the organism that would fix the whole body plan. In experiments with salamanders, the area of the young amphibian embryo known as the dorsal lip region (which would normally develop to become the back side of the organism) was shown to be concerned with the development of neural tissue, around which the rest of the organism followed. When Proescholdt removed tissue from the dorsal lip of one embryo, and introduced it to the skin of another evolving embryo the cells that were supposed to become ordinary skin instead started developing a second nervous system. The result was a salamander with two heads. In the final article outlining this result, the name "organizer" was used to characterise the "master-inductor" Proescholdt and Spemann had discovered.

What were the broader implications of this "organizer principle"? Most importantly, it signalled a methodologically organicist approach that found it sufficient to experiment on specific levels of organisation without reducing to lower levels in order to find explanations of the phenomenon in question. When it comes to induction and the organizer, Spemann in fact held that these concepts *only* existed on their own level of organisation and specialisation, as a kind of "emergent properties" which simply did not yet exist below specific levels of embryonic development. Furthermore, induction seen as a causal phenomenon (specialised tissue inducing lower-level tissue to develop in a certain way) involved a reversal of the explanatory arrow, from the bottom-up of the reductionist to the top-down of the organicist. A methodological approach was thus developed that did not rest on reductionism. The development of this organicist approach, and the discoveries it led to, were together deemed deserving of a Nobel Prize.

CONCLUSIONS

Early 20th century biology had room for positions tending in the direction of a "re-enchantment of life". While the disenchantment of life had rendered a picture where living organisms were nothing but machines, and their whole existence and functioning

could, in principle, be understood in the exact same way as machines could (that is, in terms of mechanistic interaction of constituent parts), both organistic and vitalistic perspectives were challenging this view. For the organicist, the full *calculability* of organisms was strongly contested, especially in terms of reduction and mechanics. The vitalist went even further, claiming that mysterious forces had to be added to the equation if life was to be truly grasped. While these positions varied greatly in the degree to which they would influence the future direction of biology, they were all decidedly part of the space of possibilities in the discipline during these first three decades of the 20th century. What is more, they were all at various instances argued on the basis of experimental data, and they all contributed to the broader theoretical and philosophical debates of the discipline.

In the longer run, both organicism and certainly vitalism would vanish from the scene. Partially as a response to these intellectual fashions of the early century, a new and more powerful mechanistic framework was conceptualised, leading to a strong paradigm that has continued to dominate biological research since WWII. Anti-mechanistic positions were increasingly marginalised. Driesch's radical position was completely unacceptable to most biologists already before 1910: the experimental problem that he claimed to have "solved" by invoking entelechy had already been given fruitful explanations by his colleagues, pushing research into new and fruitful domains. Driesch, however, continued developing and lecturing on his vitalistic philosophy, mostly to non-biologists, for several decades after his own experimental interpretation had become obsolete.

While the ultimate fate of organicism and vitalism would be scientific oblivion, then, they were still viable non-mechanistic options during the first decades of the 20th century. They were part of a broader struggle, which had philosophical and cultural as well as scientific foundations, namely the problem of disenchantment. A definition and theory of life will necessarily have repercussions for how we view ourselves as human beings, and how we see our place in nature at large. In this light, it is not so surprising that the question of mechanistic and non-mechanistic understandings in this particular field should be connected with a broader range of human and social sciences as well. In the following section we shall both probe a bit broader and dig a little deeper, following the connections that the question of life brought into psychology and philosophy of

mind. The basis for this bridge should be sought in one issue in particular: the notion of *teleology* as a counterpoint to mechanism.

3 The Conquest of Consciousness: Psychology and the Place of Mind in Nature

In the schools of Western philosophy, the question of what life is has been intrinsically connected with concepts such as soul, mind, and consciousness. This was the case in both classical and scholastic philosophy; as a trend it continued, to an extent even intensified, after the scientific revolution and the Enlightenment. As evinced by the discussion of the Cartesian mechanistic conception and the later views of Huxley and the Victorian naturalists, how one positioned oneself on the question of what life is and how it works will eventually lead to, if not already imply, a psychological theory. For Descartes, the conclusion was that animals did not *have* a psychology, while human possessed a *res cogitans* somehow mysteriously connected to the pineal gland at the centre of the brain. For Huxley the solution was epiphenomenalism. Materialistic positions became the basis for those who sought to liberate psychology from philosophy and make it an independent empirical scientific discipline during the second half of the 19th century. Wilhelm Wundt (1832–1920) developed his groundbreaking academic psychology from a thorough basis in physiology, particularly the physiology of perception.[40] As psychology expanded, both institutionally and geographically, the reaction to Wundt's strictly mechanistic and physiological focus took hold both in the early psychical research movements, and within certain quarters of academic psychology. Out of this landscape emerged Frederic Myers (1843–1901), whose ideas on the "subliminal self" influenced Freud and the later psychoanalytic tradition, and whose notion of a spectrum of consciousness had a deep impact on William James'

[40] Wundt's first book on perception, *Beiträge zur Theorie der Sinneswahrnehmung*, was published in 1862, and was followed by his two ground breaking volumes on psychology, *Vorlesungen über die Menschen - und Tierseele* (1863), and *Grundzüge der physiologischen Psychologie* (1874). Before these works, and besides them, he published several books on medicine and physiology in general. For a discussion of the emergence of Wundt's psychology and reactions to it by voices who looked to the psyche for mystery and enchantment, see Heather Wolffram, *Stepchildren of Science*, 37-43.

psychological theories.[41] Myers and James may both be seen as champions of a psychological programme that opposed the mechanistic and materialistic foundations of the Wundtian research programme. This critique was still present in the early 20th century.

It is also in this broader landscape that we should place such a towering figure as Sigmund Freud, and the whole school of psychoanalysis that followed in his wake. While the name "Freud" is all too often mentioned in the same breath as the word "psychology", it remains a fact that Freud was never an integrated part of the academic psychological community. He did not work within the established schools of psychological thought, did not follow the research methods of academic psychology, and did not contribute much to their advance and conceptual development.[42] Freud's impact was mostly outside of academic psychology: on psychiatric practice, no doubt, and on theorising in fields such as sociology and anthropology, but perhaps most importantly on public discourse about the psyche. That is not to say that Freud was completely ignored by psychologists – indeed he was discussed, but not primarily as a professional colleague sharing an academic discourse. Freud himself paid no attention to academic psychology, and hardly ever referenced a single psychological experiment in his work. The psychologists, on their part, acknowledged that Freud, despite his unscientific methods, had seen something important about everyday life, and on this level they had to engage with some of his ideas. As his obituary in *The Psychological Review* in 1939 stated, 'it is in his role as man in the street, not on the basis of his special knowledge, that a psychologist pays attention to Freud'.[43]

[41] See James' obituary of Myers: James, 'Frederic Myers' Service to Psychology'. There is also a much longer undercurrent of early psychological discourses here related to the influence of Mesmerism and artificial somnambulism, particularly in their Romantic interpretations. These positions were particularly influential in the revolt against Wundtian psychology in the context of psychical research. For historical overviews, see especially Henri Ellenberger, *Discovery of the Unconscious*; Alan Gauld, *A History of Hypnosis*; Adam Crabtree, *From Mesmer to Freud;* Alison Winter, *Mesmerized*.

[42] For an impression of Freud's relation to academic psychology at his death in 1939, see the obituary published in *Psychological Review*: Edna Heidbreder, 'Freud and Psychology'.

[43] Ibid., 192.

While the influence of Freud and psychoanalysis on public discourse in the 20th century is undeniable,[44] his ideas will not be dealt with in any detail in this chapter or indeed in the rest of the work, for the reasons given above: our main concern at present is with the role of the *academy* and with scientific knowledge produced within it; hence it is on those working within academic traditions, embodied in academic institutions, that we must focus.

Debates concerning mechanism and teleology as theoretical frameworks for understanding human psychology and relating psychology to biology are not hard to find in the academic psychological literature of the period. The English psychologist William McDougall (1871–1938) was an internationally renowned champion of a non-mechanistic approach to psychology during the three first decades of the century, although largely reduced to an anecdote in the history of psychology today. McDougall deserves our attention because he explicitly aligned his psychology with both biological vitalism and with psychical research, and fought to save teleology in the theories of psychology as well as in evolutionary biology. He also mounted a full-scale attack on the new psychological paradigm that was gaining ground in American universities at the time: behaviourism. As we shall soon see, the behaviourism debate accentuates the main conceptual fault lines in psychology and biology alike.

FROM MIND TO BEHAVIOUR: JOHN WATSON AND THE BEHAVIOURIST REFORM

[44] It is interesting to quote a contemporary verdict of why and in which way Freud was successful. Again, from Heidbreder's obituary: 'An essential part of Freud's contribution is the form in which he presented his teachings, a form which made statable for open and public discussion events which occurred in hidden private worlds. In brief he invented a mythology and a terminology. By the liberal use of analogy and metaphor he constructed a world of symbols well adapted to the human propensity for thinking in terms of concrete situations: a world not of abstractions, difficult to conceive and attend to, but of picturable persons and objects and places, as easy to think and talk about as the world of a novel or drama, and somewhat similar in its appeal to human interest. By reference to this world layman and scientist alike found it possible to formulate the problems of depth psychology. It is profoundly significant that the Freudian terminology has been widely adopted, and that even among psychologists who find Freud's explanations worthless, there are many who find his terminology indispensable.' Heidbredner, 'Freud and Psychology', 192-193.

In the spring of 1913 a new paradigm for the science of psychology was proclaimed in the journal *Psychological Review*, the leading psychology journal in North America at the time. The article 'Psychology as the Behaviorist Views It', written by James B. Watson, professor of psychology at Johns Hopkins University, soon became something of a manifesto for the rising behaviourist school of psychological research. Rather than inventing behaviourism from scratch, Watson's article consolidated certain tendencies that had already been present for a while in the methodological and theoretical debates between the two major schools of psychology at the time: structuralism and functionalism. In the history of psychology, "structuralism" refers primarily to Edward B. Titchener's (1867–1927) development of Wundt's psychology after moving to the United States in the mid 1890s, when he became professor of psychology at Cornell. The basic perspective of structuralism was to take as its fundamental area of study the *structure* of consciousness and mind as such, classifying and analysing the relations between its components by way of introspection.[45] By contrast, functionalism constituted a different research focus. It was less interested in systematising the content and structure of experience through introspection than in looking at the interaction of mental processes and the environment of psychological agents. Functionalist psychology largely sprung out of the American pragmatist approach to philosophy of mind and philosophy of science, with both William James and John Dewey considered among its founders and early exponents. The main spokesperson and developer of functionalism was, however, the University of Chicago based psychologist James Rowland Angell (1869–1949).[46]

Functionalism had already raised the question of what use there really was of internal mental categories in the study of psychology, and particularly what to do with the concept of "consciousness". In a paper published in 1904, William James had put it like this:

[45] Titchener's emphasis on introspection was made clear, and its various ways of application to the areas of experimental psychology laid out in much detail, in his first and influential textbook, written for his courses at Cornell in 1896, *An Outline of Psychology*. It is notable that the book was concluded with three chapters on 'The Ultimate Nature of Mind', focusing on philosophy, metaphysics, and the mind-body problem. See Titchener, *An Outline of Psychology*, 339-346.

[46] E.g. Angell, *Psychology* (1904); idem, 'The Province of Functional Psychology'.

> For twenty years past I have mistrusted 'consciousness' as an entity; for seven or eight years past I have suggested its non-existence to my students, and tried to give them its pragmatic equivalent in realities of experience. It seems to me that the hour is ripe for it to be openly and universally discarded.[47]

James' position was not an eliminativist one, however, but rather grounded in his supposition that 'there is only one primal stuff or material in the world, a stuff of which everything is composed', and that this stuff can be called 'pure experience'.[48] Nevertheless, questioning the usefulness of the concept of consciousness was fast becoming a general trend.[49] This debate was particularly clear on those areas where psychology and physiology intersected. Jacques Loeb, for example, wrote in 1912 that:

> The contents of life … are wishes and hopes, efforts and struggles … disappointments and suffering. And this inner life should be amenable to a physico-chemical analysis? In spite of the gap which separates us today from such an aim, I believe that it is attainable.[50]

As Eliott P. Frost summed the situation up in the debate section of *Psychological Review* that same year,

> men who are distinctly physiologists and have no immediate psychological interests [like Loeb], see in the concepts of psychology only an illusive subjective nomenclature that is both inadequate to throw further light on their strictly biological problems, and, what is more, is directly confusing. To ask whether animals have conscious *states,* whether they reflect upon their own processes as they occur, is an irrelevant, because an inconceivable hypothesis. Physico-chemical explanations, while not yet illuminative of life phenomena as such, have a very direct answer to the question of fixed behavior as the expression of life phenomena.[51]

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[47] James, 'Does "Consciousness" Exist?', 477-478.

[48] Ibid., 478.

[49] Even at the point of writing his article, James noted this trend, mentioning in a footnote '[a]rticles by Baldwin, Ward, Bawden, King, Alexander and others. Dr. Perry is frankly over the border.' Ibid., 477 n1. On James' curious ontological position, and its relation to the thought of Frederic Myers, we shall have more to say in chapter eight.

[50] Quoted in Frost, 'Discussion: Can Biology and Physiology Dispense with Consciousness?', 246.

[51] Ibid., 248.

An unease about consciousness was also expressed by leading functionalist psychologists. In a paper addressed to the American Psychological Association in 1910, James Angell argued, on *methodological* grounds, that

> it is quite within the range of possibility, in my judgment, to see consciousness as a term fall into as marked disuse for everyday purposes in psychology as has the term soul. This will not mean the disappearance of the phenomena we call conscious, but simply the shift of psychological interest toward those phases of them for which term like behavior affords a more useful clue.[52]

The soon-to-be founder of behaviourism, John Watson (1878–1958), had done his PhD on learning in animals with Angell at the University of Chicago in 1903,[53] and was painfully aware of the problems in describing functionalist analysis of mental life with the nomenclature of older introspective psychology. When Watson launched his own programme at the age of 35, he started from a problem that was already well known and much debated in the psychological literature. His solution to it was however a bold and radical one, seeing only one way to get rid of the problems haunting psychology and making it at long last a truly scientific discipline: all mentalistic concepts had to go, together with the introspective method. This iconoclastic programme was spelled out already in the opening paragraph of Watson's 1913 article:

> Psychology as the behaviorist views it is a purely objective experimental branch of natural science. Its theoretical goal is the prediction and control of behavior. Introspection forms no essential part of its methods, nor is the scientific value of its data dependent upon the readiness with which they lend themselves to interpretation in terms of consciousness. The behaviorist, in his efforts to get a unitary scheme of animal response, recognizes no dividing line between man and brute. The behavior of man, with all of its refinement and complexity, forms only a part of the behaviorist's total scheme of investigation.[54]

Watson dismissed structuralism out of hand, while at the same time expressing strong reservations about functionalism as it was currently practiced:

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[52] Cited in Angell, 'Behavior as a Category of Psychology', 255 n. 2.

[53] See, e.g., the introduction to his PhD dissertation: Watson, *Animal Education*, 5.

[54] Watson, 'Psychology as the Behaviorist Views It', 158.

> I have done my best to understand the difference between functional psychology and structural psychology. Instead of clarity, confusion grows upon me. The terms sensation, perception, affection, emotion, volition are used as much by the functionalist as by the structuralist. The addition of the word "process" ("mental act as a whole", and like terms are frequently met) after each serves in some way to remove the corpse of "content" and to leave "function" in its stead. Surely if these concepts are elusive when looked at from a content standpoint, they are still more deceptive when viewed from the angle of function, and especially so when function is obtained by the introspection method.[55]

The problem was that psychology had not succeeded in ridding itself of outmoded metaphysical notions of the past. Thus, Watson saw his behaviourist programme as being the logical conclusion of functionalism, the culmination of a process that had been initiated when psychology started taking environment interaction, stimuli responses, and physiology – in short, all the *external* and quantifiable aspects of "mental life" – seriously. Behaviourism provided a way out of the philosophical mind-body problem that continued to be latched on to psychological research for as long as it spoke *both* of internal and external, subjective and objective, consciousness and behaviour. Behaviourism was 'the only consistent and logical functionalism':

> In it one avoids both the Scylla of parallelism and the Charybdis of interaction. Those time-honored relics of philosophical speculation need trouble the student of behavior as little as they trouble the student of physics. The consideration of the mind-body problem affects neither the type of problem selected nor the formulation of the solution of that problem. I can state my position here no better than by saying that I should like to bring my students up in the same ignorance of such hypotheses as one finds among the students of other branches of science.[56]

Watson's programmatic call to make psychology scientific by throwing out introspection, mentalistic language, and the entire philosophical tradition attracted some attention among psychologists in the following years. However, the discipline did not automatically convert to the new gospel of behaviourism. James Angell followed up

[55] Ibid., 165.

[56] Ibid., 166.

with an article on 'Behavior as a Category in Psychology', which, despite reservations, subscribed to the general ideas:

> In general I should recognize cordially the service rendered by so courageous and lucid a statement of creed, although a part of [Watson's] program seems to me rather Utopian and impracticable and other portions appear to disregard somewhat obvious distinctions and difficulties. Meantime, ... I am heartily sympathetic to most of the author's constructive, positive program for emphasizing objective methods in psychology.[57]

Other articles in *Psychological Review* took up this direction, discussing the category of behaviour and the methodological contribution of behaviourism in relation to the existing schools of psychology.[58] Meanwhile, Watson published a book length introduction to psychology bearing the telling title *Behavior* (1914), and new articles in which the position was further developed.[59] These works remained largely programmatic and polemical, without providing much in terms of novel experimental results to prove the power of the paradigm.

This would change in 1920, when Watson and his assistant (and later wife) Rosalie Rayner published the results of their famous "Little Albert" experiment.[60] The experiment with the infant "Albert B." was presented as first evidence that one could in fact condition a human subject to develop specific emotional responses triggered by specific stimuli. At the beginning of the experiment, a nine-months old infant was presented with a number of objects, including a rabbit, a rat, a burning newspaper, cotton wool, and various masks. Psychological tests were conducted demonstrating that little Albert displayed no reaction of fear towards any of these objects. Then the actual experiment began: Albert was given a white rat to play with, but while he was doing this, Watson and Rayner scared the infant with loud noises created by striking a steel bar with a hammer behind him. The fear induced by this loud noise was considered a natural response. The point of the experiment, however, was to show that the

[57] Angell, 'Behavior as a Category of Psychology', 261 n. 3.

[58] E.g. B. H. Bode, 'Psychology as a Science of Behavior'(1914); A. P. Weiss, 'Relation between Structural and Behavior Psychology' (1917).

[59] E.g. Watson, 'An Sttempted Formulation of the Scope of Behavior Psychology' (1917); idem, *Psychology from the Standpoint of a Behaviorist*

[60] Watson and Rayner, 'Conditioned Emotional Reactions'.

successive pairing of a stimulus that triggered fear (the noise), with a stimulus that did *not* naturally trigger fear (the rat), led to a *conditioned* fear response: when poor little Albert was exposed to the rat again after the conditioning, he would immediately start crying and attempt to get away from it. The experiment garnered much attention, and Watson's behaviourism subsequently experienced its real scientific breakthrough in the 1920s.[61]

The Battle of Behaviourism: James B. Watson vs. William McDougall

Another event of 1920 that would have much to say for American psychology over the coming decade was the arrival at Harvard of the English psychologist William McDougall (1871–1938). McDougall, who we will meet again in the chapters on psychical research and parapsychology due to his centrality in the development of those fields, had published a highly successful psychology textbook in 1908. *An Introduction to Social Psychology* went through as many as 23 editions in less than 20 years, making it one of the most successful English-language psychology books ever published.[62] Having taught at both Cambridge and Oxford, McDougall was considered the most eminent English psychologist of his generation. His position, however, was strongly conservative when compared to someone like Watson. Keeping the Western philosophical canon in much higher regard, McDougall explicitly defended a dualistic position, wanted to save teleology as a fundamental concept in psychology and biology alike (the two were intimately connected in his work, as they were for Watson and so many other psychologists), and bordered, essentially, on a form of neo-vitalism. In another influential book, *Body and Mind*, McDougall related his psychology more explicitly to the philosophy of mind, and proposed to see his own position as a variety of "animism". For him, "animism" denoted the view that

[61] See for example his popular book, *Behaviorism* (1925)

[62] See Graham Richards, 'Defining a Distinctively British Psychology', 654. Richard, reflecting on this volume on the occasion of its 100th anniversary in 2008 writes that the only other English language academic psychology text from before 1910 which is still in print is William James' *Principles of Psychology*.

> all, or some, of those manifestations of life and mind which distinguish the living man from the corpse and from inorganic bodies are due to the operation within him of something which is of a nature different from that of the body, an animating principle … .[63]

After moving to the United States in 1920, and taking over William James' old chair of psychology at Harvard, McDougall would soon become a controversial figure. He was a supporter of the Lamarckian theory of evolution, heavily involved with psychical research, and also a strong proponent of eugenic policies in the United States.[64] In fact, immediately upon arriving McDougall gave a number of public lectures in which he warned about dwindling intelligence rates among the American population, urging that eugenic measures be taken to protect the nation from itself. The title of the published lectures – *Is America Safe for Democracy?* (1921) – was no less provocative than the content.[65]

When it comes to their basic views of life and mind the psychologies of Watson and McDougall could not have been much more different. In fact, McDougall became known as one of the primary spokespersons against the behaviourist paradigm in American psychology in the 1920s. In February 1924, Watson and McDougall were asked to debate their respective views on behaviourism before the distinguished Psychology Club in Washington. The two lectures, which neatly illustrate the key issues at stake in this debate in the 1920s, were published together in 1929 under the name *The Battle of Behaviorism: An Exposition and an Exposure*. Reading these two essays together gives a good insight into what the battle really concerned, and we shall spend some time juxtaposing the positions in what follows.

Watson's defence of behaviourism employs a number of strategies that mix in sometimes surprising ways. The subtitle of the essay, 'The Modern Note in Psychology', plays on the novelty of the approach. Behaviourism is linked with strict scientific method, and competing visions are branded as unscientific and old-fashioned. In pair with the invocation of science and progress, however, goes a curious use of references to religion and tradition. Somewhat surprisingly, Watson starts off by claiming that

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[63] McDougall, *Body and Mind*, iix.

[64] Cf. Asprem, 'A Nice Arrangement of Heterodoxies'.

[65] We will have a closer look at the relation between McDougall's eugenics and his views on life, mind, and psychical research, in chapter nine.

behaviourism, far from being a strange new and counterintuitive invention, is in reality the earliest type of psychology attested in history. Hence, he argues, its current establishment is but a return to origins and to "common sense". Surprisingly, Watson claims to find the earliest example of a psychological experiment in *Genesis* 3:

> The tempting of Eve by the serpent is our first biblical record of the use of psychological methods. May I call attention to the fact, though, that the serpent when he tempted Eve did not ask her to introspect, to look into her mind to see what was going on. No, he handed her the apple and she bit into it.[66]

On this, one has to say, extremely thin basis, Watson argued that 'early psychology was Behavioristic' – it 'grew up around the notion that if you place a certain thing in front of an individual or a group of individuals, the individual or group will act, will do something. Behaviorism is a return to early commonsense.'[67]

These are not merely loose claims to ancient tradition. Over the following pages, Watson develops a rough theory of how *religion* gradually emerged from exactly this kind of primeval behaviouristic observation, and furthermore – how religion had created a false and speculative psychology that still held sway over much of academia. The origins of religion, according to Watson, was with a class of lazy behaviourists, who became the first "medicine men" and priests by learning how to take advantage of other peoples' conditioned responses:

> No one knows just how the idea of the supernatural started. It probably had its origin in the general laziness of mankind. Certain individuals who in primitive society declined to work with their hands, to go out hunting, to make flints, to dig for roots, became Behavioristic psychologists – observers of human nature. They found that breaking boughs, thunder, and other sound-producing phenomena would throw the primitive individual from his very birth into a panicky state (meaning by that: stopping the chase, crying, hiding, and the like), and that in this state it was easy to impose upon him. These lazy but good observers began to speculate on how wonderful it would be if they could get some device by which they could at will throw individuals into this fearsome attitude and in general control their behaviour …

[66] Watson, 'Behaviorism – The Modern Note in Psychology', 8. The behaviouristic interpretation of the biblical story of the Fall was already given in an article in 1917. See Watson, 'An Attempted Formulation of the Scope of Behavior Psychology', 330.

[67] Watson, 'Behaviorism', 8-9.

> These individuals were called medicine men, soothsayers, dream interpreters, prophets – deities in modern times. Skill in bringing about these emotional conditionings of the people increased; organization among medicine men took place, and we began to have religions of one kind or another, and churches, temples, cathedrals, and the like, each presided over by a medicine man.[68]

From this very brief and sweeping analysis Watson constructs a vision in which all sorts of religious and supernatural ideas and concepts have their origins in, and are retained in large populations by, unquestioned authority based on the primeval behaviourists' control of fear responses.[69] This has had implications for the study of psychology, argues Watson, turning to the concept of the "soul" to draw up a grand genealogy that connects introspective and "conservative" psychology with religion. Despite the fact that '[n]o one has ever touched a soul, or has seen one in a test tube, or has in any way come into a relationship with it as he has with the other objects of his daily experience',[70] the soul had been given a very prominent place in Western thought through theology and philosophy. The scientific revolution had resulted in the soul being eliminated from certain fields of knowledge such as astronomy and physics. In philosophy and psychology, however, dealing with 'non-material objects', the soul remained in place. When Wundt's experimental psychology had been established, it *seemed* as if the religious heritage was finally removed also in this field, but Watson argued that this was only an illusion:

> It was the boast of Wundt's students, in 1869, when the first psychological laboratory was established, that psychology had at last become a science without a soul. For fifty years we have kept this pseudo-science exactly as Wundt laid it down. All that Wundt and his students really accomplished was to substitute for the word "soul" the word "consciousness".[71]

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[68] Ibid., 10-11.

[69] 'I think an examination of the psychological history of people will show that their behavior is much more easily controlled by fear than by love. If the fear element were dropped out of any religion, that religion would not survive a year.' Ibid., 11.

[70] Ibid., 12-13.

[71] Ibid., 14.

Consciousness is just as fuzzy, unscientific and useless a concept as the soul, says Watson, but the psychologists have been able to operate with it by going from the assumption that "everybody knows" what "it" is.[72] The result of the

> major assumption that there is such a thing as consciousness, and that we can analyze it by introspection, [is that] we find as many analyses as there are individual psychologists. There is no element of control. There is no way of experimentally attacking and solving psychological problems and standardizing method.[73]

The behaviourist's alternative is an exclusive focus on observable and measurable things in order to introduce rigorous experimental standards modelled on those that had recently led to such unprecedented progress in the fields of physics, chemistry, and biology. It is notable that Watson on this occasion emphasises the connection between behaviouristic psychology and biology. Focusing exclusively on observable behaviour means that one is studying *organisms* rather than "minds". This, furthermore, means that 'psychology connects up immediately with life'.[74]

The connection between biology and psychology was, of course, not new or radical in itself. Neither was it a connection which McDougall would disagree with. Rather, what was at stake was the question of just *how* psychology and the organism were connected. From Watson's perspective, the difference between behaviourism and McDougall's position concerned their stance on *vitalism*:

> *The Behaviorist finds no scientific evidence for the existence of any vitalistic principle*, such, for example, as Prof. MacDougall's "purpose", in his explanation of the increasing complexity of behavior as we pass from infancy to adulthood. It is a truism in science that we should not bring into our explanation any vitalistic factor. We need nothing to explain behavior but the ordinary laws of physics and chemistry.[75]

Here Watson positions himself towards mechanistic-materialism in biology, and embraces a reductionism along the lines of Loeb. From this premise, it would appear

[72] Ibid., 15.

[73] Ibid., 16.

[74] Ibid., 18.

[75] Ibid., 25-26. Italics in original.

that those invoking consciousness, purpose, or teleology into their psychologies did so as a result of jumping to conclusions from insufficient evidence:

> There are many things we cannot explain in behavior just as there are many things we cannot explain in physics and chemistry, but where objectively verifiable experimentation ends, hypothesis, and later theory, begin. But even theories and hypotheses must be couched in terms of what is already known about physical and chemical processes. He then who would introduce consciousness, either as an epiphenomenon or as an active force interjecting itself into the chemical and physical happenings of the body, does so because of spiritualistic and vitalistic leanings. The Behaviorist cannot find consciousness in the test-tube of his science. He finds no evidence anywhere for a stream of consciousness, not even for one so convincing as that described by William James.[76]

It is here that the main difference between the two psychologies really becomes apparent. Their starting points are opposed to each other. In the "conservative" position, mind is taken for granted: besides dissecting it into various components (the structuralist and introspective approach), one would seek its relation to the body by seeing behaviour as "expressions" of mental states, and actions as "motivated", "intentional", or "directed" in various ways by such states. Mind becomes the *explanans* of behaviour. For the Watsonian behaviourist, who follows a mechanistic-materialist position on biology, mind at best enters as an *explanandum*. At the very least, the *concept* of mind does: Watson was ready to give a behaviouristic explanation of how the concept of "the soul" had been invented in the first place, by lazy but clever and power-hungry ancient behaviourists. More interesting than the question of what minds "were" was the question of how people came to talk about and attribute minds to themselves and to others.

* * *

McDougall agreed that this was the crux of their disagreement, but in his own paper he also added a few other dimensions to the discussion. He introduced an important distinction that may at first have been clouded: that between behaviourism proper, and what McDougall called 'the mechanistic dogma'. Interestingly, he added that of these

[76] Ibid., 26.

two fundamental issues, '[t]he second is the more important'.[77] The distinction suggests that behaviourism and mechanism are not linked by necessity. Moreover, by separating behaviourism from mechanism, McDougall was able to present his own work as being, in fact, entirely compatible with the best kind of behaviouristic methodological principles, while remaining overall a revolt against mechanistic explanation in psychology.

To understand this point clearly, we need to acknowledge that McDougall also offered a distinction between three different *forms* of behaviourism:

1) 'Metaphysical Behaviorism' (which McDougall also calls 'Neo-Realism');
2) 'Watsonian Behaviorism' (Watson's original, which is primarily *methodological*);
3) 'Sane Behaviorism'.

Their names already reveal which type McDougall himself preferred, but what was the difference between the three? The first type entails what has in later philosophy of mind become known as *eliminativism*. Behaviour is all there really is, and the mind is an illusion (McDougall describes this position, quite aptly, as 'an inversion of subjective idealism'). The Watsonian position was, in contradistinction, meant to be a purely methodological doctrine, which gave prescriptions about how best to conduct psychological research. Finally, 'sane Behaviorism' is described as

> … that kind of psychology which, while making use of all introspectively observable facts or data, does not neglect the observation of behaviour, does not fail to make full use of all the facts which are the exclusive data of Watsonian Behaviorism.[78]

In the sane variety, introspective and behaviouristic data are meant to complement one another. McDougall submits that this is in fact a very common position in modern psychology; remembering our discussion of structuralism, functionalism, and the role of physiology in psychology, it is hard to disagree. With reference to this distinction, and to

[77] McDougall, 'Fundamentals of Psychology – Behaviorism Examined', 46.

[78] Ibid., 48-49.

"sane" behaviourism in particular, McDougall proclaims himself to be a leading behaviourist:

> And now, trampling ruthlessly on Dr. Watson's feelings, I make the impudent claim to be the chief begetter and exponent of this sane Behaviorism or Behavioristic Psychology, as distinct from the other two forms of Behaviorism. I claim in fact that, as regards the Behaviorism which is still approvingly referred to by many contemporary writers other than technical psychologists, I, rather than Dr. Watson, am the Arch-Behaviorist.[79]

Over the following pages McDougall draws up a history of the concern with behaviour in earlier psychological literature. He reminds his readers that John Stuart Mill had invented a field he called "ethology", dedicated to the study of behaviour, and that Charles Mercier had similarly proposed a new science of behaviour under the name of "praxiology".[80] On this background McDougall recontextualises his own career as having been from the start entirely in line with the problem that people like Mill and Mercier had been struggling with – namely, the realisation that psychology had lost out on actual behaviour. However, while Mill and Mercier had responded by wanting to set up an entirely new field for this study, McDougall was a reformist:

> … what was needed was not a new science of behavior under a new Greek name, but rather a reform of psychology, consisting in a greater attention to the facts of behavior or conduct, in the formulation of some theory of human action less inadequate than the hedonism of Mill …, the ideo-motor theory of the intellectualists, or the mechanical reflex-theory of the Spencerian psychologists.[81]

McDougall sees his entire career as having revolved around this problem, trying to reform psychology by integrating physiological and behaviouristic studies and experiments. He could even cite a booklet written by himself and entitled *Psychology,*

[79] Ibid., 49.

[80] Ibid., 50-51.

[81] Ibid., 51.

the Study of Behavior. This text had been published in 1912, one year before Watson's 'Psychology as the Behaviorist Views It'.[82]

To a large extent, then, McDougall considers himself and Watson to be in the same company. They shared a wish to reform psychology in order to overcome a traditional neglect of behaviour.[83] The difference, as McDougall saw it, was that Watson had fallen into an opposite extreme, in which one lop-sided position was effectively replaced by another. Considered as a purely methodological debate, the question of behaviourism concerned what sort of *data* a psychologist should be working with. Introspective data had been the first and most intuitive set for psychology. Watson held that this data set was useless, and had to be replaced by the second data set of external behaviour. The main problem McDougall saw with Watsonian behaviourism was not that it emphasised this second set of data, but that it traded in the old set of introspective data at the same time. McDougall held that there was also a *third* set of data, which Watson automatically ignored by discounting introspection and mentalistic categories of any kind: 'the facts which we may observe as to the various conditions (external or bodily and mental or subjective) under which the various modes and phases of our conscious experiences arise'.[84] This type of data, generated from the correlation of introspective reports and behaviouristic observation (the first and second sets), was made impossible if introspection was not to be allowed at all. Watson had thus restricted himself to only one out of three classes of valuable data about the mind, and McDougall went on to spend much time showing how many straight-forward, central, or even unavoidable psychological research questions were thus left completely out of bounds for the behaviourist. These were offered up as testaments to behaviourism's poverty as a psychological paradigm.[85]

Having spent half of his lecture more or less ridiculing Watson's position (and partially his character as well, in a couple of nasty *ad hominems*) McDougall finally

[82] Ibid., 52. This book was part of a series, 'The Home University Library of Modern Knowledge', which offered cheap booklets on the newest developments in science. For an overview of the series, placed in the context of popularising literature of the era, see Bowler, *Science for All*, 128-131.

[83] McDougall, 'Fundamentals of Psychology – Behaviorism Examined', 53.

[84] Ibid., 54-55.

[85] Ibid., 55-66.

addressed the more important and fundamental question of 'the mechanistic dogma'.[86] McDougall saw this dogma as more important than the question of behaviourism as such:

> unlike Watsonian Behaviorism, [the mechanistic dogma] is not merely a passing fashion of a group of pundits, cloistered in psychological laboratories. It is a metaphysical assumption which has been of great influence ever since the day when Democritus first clearly formulated it. It has reappeared as the determining factor in such different philosophies as the materialism of Hobbes and La Mettrie, the pantheism of Spinoza, and the idealism of Bernard Bosanquet. And it is accepted to-day by a larger number of biologists as an unquestionable first principle and a necessary foundation of all science.[87]

Mechanism was a much bigger threat than faddish behaviourism, precisely because more established and powerful within the sciences as a whole. While the mechanistic assumption had indeed proved itself very successful in the physical sciences, McDougall was clear that in the study of human psychology, and even in animal psychology or biology at large, it faced serious problems.

The implications of the "mechanistic dogma" for the way we understand human life were illustrated by giving two definitions of mechanism:

> The narrower formulation runs: Man is a machine and his every action is the outcome of mechanical processes that in theory can be exactly calculated and foretold according to strictly mechanistic principles. The wider formulation runs: Every human activity and process, like every other process in the world, is strictly determined by antecedent processes, and therefore, in principle, can be predicted with complete accuracy.[88]

We should pause for a second and note how close these definitions of mechanism in the sciences of life and mind come to being formulations of the epistemological dimension of the problem of disenchantment. McDougall's is a description of how a full-blown application of mechanism to the phenomena of life and mind would amount to the complete disenchantment of the world. The reason to reject mechanism was, however,

[86] Ibid., 66-67.

[87] Ibid., 67.

[88] Ibid., 67-68.

not simply an emotional response, but was backed up with theoretical arguments. Foremost of these was the argument that the pragmatic usefulness of the mechanistic outlook was far less evident in the biological and psychological sciences than in physics and chemistry. McDougall would even go to the step of proclaiming that the mechanistic hypothesis had *never* proved itself to be a useful working hypothesis when human nature was concerned, but had rather been a hindrance and a blindfold to many who had followed research along its lines.[89] Watson's behaviourism was thus only one of several 'absurd views of human nature' to have come out of dogmatic mechanistic positions.[90] In fact, McDougall held that any psychology that bases itself on mechanism will be utterly useless, because it will have to get rid of some of the most important concepts for understanding human action: 'all such words as "incentive," "purpose," "goal," "desire," "valuing," "striving," "willing," "hoping," and "responsibility"' would have to be left out, not only of the behaviouristic model, but of *any* mechanistic psychology which stayed true to its theoretical foundation.[91] In doing this, the mechanical psychology was not only useless, it was also 'paralyzing to human efforts'.[92]

The bottom line of McDougall's position was indeed that psychology could not dispense with purposeful, teleological terms such as these, and thus could never be reconciled with a mechanistic theory.[93] But while mechanism in the study of life and mind was found faulty on philosophical and theoretical grounds, McDougall would also provide a critique that was very much in the spirit of the times, namely by questioning whether mechanistic explanations had a future even in the *physical* sciences. First, with

[89] Ibid., 68-69.

[90] Ibid., 69.

[91] Ibid., 69.

[92] Ibid., 72.

[93] Varieties of this position are clearly present through all of McDougall's main works, including *Introduction to Social Psychology* and *Body and Mind*. Besides the lecture we have just discussed, some more concentrated discussions are available in various articles, including McDougall, 'Purposive or Mechanical Psychology?' (*Psychological Review*, 1923); 'Mechanism, Purpose and the New Freedom' (*Philosophy*, 1934). The first of these two articles was also delivered in the form of a lecture, to none other than Watson's own students at the New School for Social Research. In it, he similarly divided the questions on which psychologists disagreed into behaviourism vs. "introspectionism" on the one hand, and mechanical vs. purposive psychology on the other. As in the debate with Watson two years later, McDougall already made it clear here that the latter distinction was the most significant one. See McDougall, 'Purposive or Mechanical Psychology?', 274.

reference to Niels Bohr, he noted that 'recently some physicists … have found that they can make better progress if they reject this mechanical hypothesis and make non-mechanical assumptions', adding that he was of the impression that 'this new fashion is rapidly gaining ground among the physicists'.[94] Next, he turned to another of our protagonists from the previous chapter, the physical chemist Frederick Soddy. As we have seen, the development of radioactivity research and the discourse on transmutation that it helped sustain became a heavy impulse for non-mechanistic and indeterminist thinking. Realising this potential, McDougall quotes at length – no less than two and a half pages in total – from Soddy's *Cartesian Economics*, in order to show that here we have a leading physical scientist who not only refuses to talk about anything other than *probabilities* as far as the physical world is concerned, but who, furthermore, holds that one needs to keep physics and chemistry out of psychology.[95] In making this claim, which can readily be seen as boundary-work on the part of psychology as a discipline, McDougall paid special attention to Soddy's statement that it 'is the invariable characteristic of all shallow and pretentious philosophy to seek the explanation of insoluble problems in some other field than that of which the philosopher has first-hand acquaintance'.[96] In other words, psychological theorising is better left to the psychologists, on the basis of their peculiar needs rather than on emulation of methods imported from other disciplines.[97]

At the end of the 1924 Washington debate, the audience voted for a winner. McDougall emerged victorious in what was a close contest dividing the public between the pro-behaviourists and the "conservatives".[98] The talks and the response of the

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[94] McDougall, 'Fundamentals of Psychology – Behaviorism Examined', 68.

[95] Ibid., 77, 78-80. It should be noted that *Cartesian Economics* belongs to Soddy's heterodox economical writings, formulated later in his career, rather than his work in physical science and radioactivity strictly speaking.

[96] McDougall, 'Fundamentals of Psychology – Behaviorism Examined', 78, 80.

[97] This rhetoric was repeated in McDougall's his presidential address to the Psychology Section of the British Association for the Advancement of Science in Toronto, 1924, entitled 'Purposive Striving as the Fundamental Category of Psychology' (printed in *Scientific Monthly,* 1924).

[98] As a side note we might mention that McDougall's position was conservative in more ways than one. These were, furthermore, connected in his rebuttal of behaviourism, which at times was supported by moralistic connotations. Commenting on the vote of the audience of the behaviourism debate, for example, a heavily misogynist attitude was embedded into the general criticism of Watson's faddish revolution:

audience mirrored a fundamental split in American psychology at the time, a split that concerned theory, method, and philosophy, and which resonated with developments in the other sciences. Indeed, McDougall's invocation of Bohr and Soddy provides a testament to the generally shaky state of science's fundament during this period, and shows how fundamental questions spread across disciplinary boundaries.

4 Evolution contra Darwin

This chapter has followed a red line through biology and psychology, focusing on the problem of mechanistic explanations and its alternatives. It has been implied throughout that the question of mechanistic explanations is central to the problem of disenchantment. When we chart out these thematic and conceptual issues a network of relations emerges across disciplinary formations, allying positions across disciplines along boundaries such as "mechanism vs. teleology". In the attempts to define the proper identity of psychology, we have seen combatants draw on issues in the more established disciplines of physics and chemistry – whether to defend a reductionistic and mechanistic course of conduct, or to contest it. The picture that emerges is one of two disciplines – biology and psychology – closely knit together by the same fundamental problems in the philosophy of science. Furthermore, the picture reveals that these questions were still largely unsettled in the inter-war period, with debates raging in academic journals and at conferences.

'The vote of the audience taken by sections after the Washington debate showed a small majority against Dr. Watson. But when account is taken of the amusing fact that the considerable number of women students from the University voted almost unanimously for Dr. Watson and his Behaviorism, the vote may be regarded as an overwhelming verdict of sober good sense against him from a representative American gathering.' (McDougall, 'Postscript [1927]', 87). Moreover, in warning about the dangers of the rising behaviourist paradigm, McDougall subtly links the behaviourist rearing of children to a warning against the ultimate taboo of a culture of "family values": paedophilia and incest: 'We have to face the prospect that in a few years' time many thousands, perhaps even millions, of young victims of this propaganda on behalf of crass materialism will be bringing up their families without other guidance than their blind faith in the Behaviorist's formulae. Having learned that all such words as effort, striving, grab, ideal, purpose, will, are entirely meaningless, they will be seen throughout this broad continent striving to form the character of their children by "conditioning their reflexes" and pathetically endeavoring to gain their affection by stimulating their "erogenous zones"; for according to the gospel of Dr. Watson, that is the one and only way.' (McDougall, 'Postscript [1927]', 95-96).

There is however one conspicuous gap remaining in our narrative so far, namely that of evolutionary theory. While we have seen that Darwinian evolution was one of the cornerstones of Victorian naturalism, providing a mechanistic framework for understanding the development of species, we still need to look somewhat closer at the development of evolutionary theories in the early 20th century. How does evolution fit into the broader picture of a struggle over mechanistic and non-mechanistic theories of life and mind? As we shall see, the development of evolutionary theories from the 19th century to the present has not followed a simple and straight-forward line. Instead, I will venture to show in this final section that it the struggles to redefine the evolutionary theories present us with a final bifurcation in philosophies of life and mind: one path tending towards disenchantment, the other towards re-enchantment. Ultimately, it was the disenchanted view that won hegemony in academic institutions. Nevertheless, the re-enchanted positions that were blossoming until about the 1940s have gone on to exert considerable influence on discourses outside the confines of the academy.

When Julian Huxley (1887–1975) published his hugely influential *Evolution: The Modern Synthesis* in 1942, he opened by reflecting on what he called 'the eclipse of Darwinism'.[99] Darwinism in its original form, understood as the theory of evolution through natural selection, had reached its peak of popularity among biologists, palaeontologists and field naturalists in the 1880s. By the year 1900 it had been eclipsed by a number of controversies, and its basic tenets had been challenged by a range of alternative positions. Evolution *as such* was never held in any doubt, but the notion that it occurred through the mechanism of natural selection was a topic of much disagreement.[100] In the first decades of the 1900s, evolutionary theory morphed into a highly contested field of scientific discourse, where a number of positions backed by differing styles of reasoning and documentation and driven by a number of different goals squared off for scientific hegemony. Besides the neo-Darwinians, emphasising natural selection and gradual change through variation and selection, the main contestants may be distinguished as neo-Lamarckism, orthogenesis, and Mendelism. I will briefly explain what was at stake in these debates, and what the various positions claimed.

[99] J. Huxley, *Evolution*, 22-28. (double-check this reference)

[100] On these controversies, see especially Bowler, *The Eclipse of Darwinism*; idem, *Evolution*, 233-265.

The evolutionary debates of the period were primarily centred on three related questions: What drives evolution? What is the cause of biological variation and inheritance, and what is the relation between the two? None of the four main positions mentioned above would answer all these three questions in the exact same way, and hence there was no paradigmatic unity in evolutionary theory. According to the *neo-Darwinian* perspective, evolution is the effect of natural selection occurring as organisms adapt to environments. By the early 20th century, Darwinism had been bolstered by two developments: Weismann's germ plasm theory of inheritance, described earlier in this chapter; and the application of statistical studies of variation in populations – an approach pioneered by Francis Galton (Charles Darwin's cousin) and known as "biometry".[101] Refined by people such as Karl Pearson and W. F. R. Weldon, neo-Darwinian biometry emphasised continuity in variation and inheritance, holding that evolutionary change was the effect of slightly varying traits accumulated in a population over time.[102] The germ plasm theory added a more specific mechanism of inheritance, linking it clearly to the reproductive systems of the organisms.

The most serious new threat to Darwinism after 1900 was the development of *Mendelism*. Taking its name from Gregor Johann Mendel (1822–1884), the Augustinian friar who conducted experiments in hybridisation with pea plants in his monastery in Austria between 1856 and 1863, Mendelism proposed new answers to the questions of variation and heredity. While these would later be brought into agreement with the Darwinian perspective, and together give rise to modern genetics, Mendelism was originally positioned in sharp contrast to Darwinism. Mendel's laws, that had remained unknown to the wider scientific community for more than 35 years, were rediscovered independently by Hugo De Vries (1848–1935) and Carl Correns in 1900.[103] While Mendel himself had seen his work as solving certain problems about hybridisation and speciation in the Linnaean tradition. In 1900 Mendel's law was given a completely new significance against the backdrop of post-Darwinian controversies about variation and heredity, continuous versus discontinuous change, and mechanisms of selection in evolution. What Mendel's law seemed to provide was a mechanism of evolutionary change which worked by discontinuous jumps rather than by gradual change. To

[101] Bowler, *Evolution*, 237-242.

[102] Ibid., 240-242.

[103] Ibid., 260.

explain very briefly: by cross-fertilising pea plants that had different characteristics in certain respects – such as height and colour – Mendel had found that the pairing of opposites, such as one tall and one short plant, did *not* produce a blend in the form of a middle-sized plant. Instead, Mendel had found that all of the first generation hybrids were tall. In the *second* generation, however, about one out of four would suddenly come out as short – even though both parents had been tall (see figure 6).

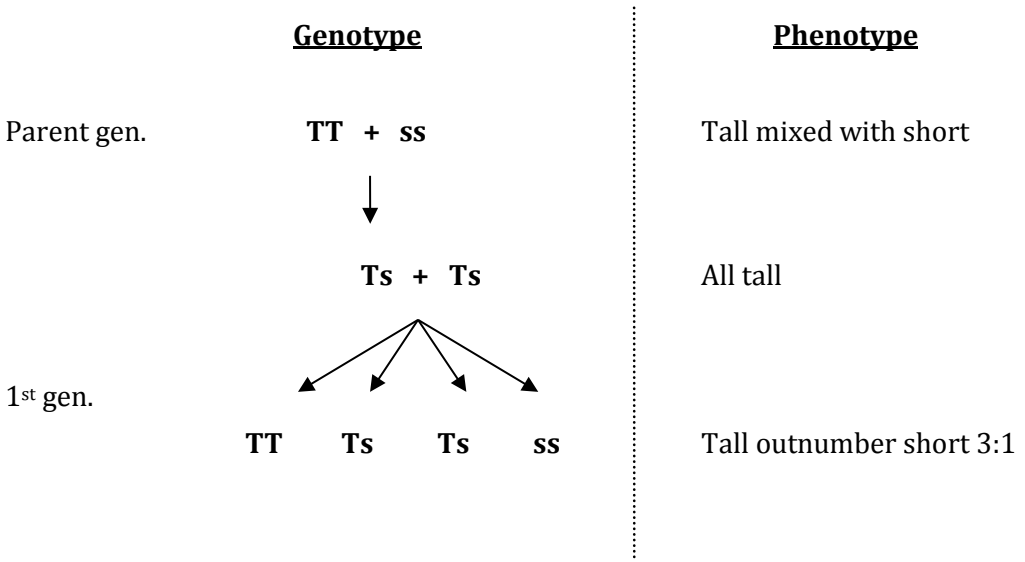


Figure 6: Illustration of Mendel's law of heredity, with genotype/phenotype distinction. "T" is the gene, or rather allele, for "tall", and is dominant; "S" is for "short", and is recessive (hence lower case). Note that these genetic concepts were completely unknown to Mendel himself.

Mendel did not *explain* these results as much as provide a rigorous mathematical *description* of the phenomenon. Among the new Mendelians, however, the regularities soon became part of explanatory schemes, allied to the germ plasm model of inheritance. To make sense of Mendel's original results, one had to assume that heredity of the traits in question must be carried by single, particulate units in the germ plasm. Furthermore, one had to assume that these units existed in a variety of forms, such that one type would cause tall length, and another small. In modern genetics, the units of hereditary traits are called "genes", and the variations "alleles".[104] When fully integrated into Mendelian genetics, the result became a classic description of such central concepts as the distinctions between dominant and recessive genes (or rather "alleles"), and

[104] Cf. ibid., 258.

between genotype and phenotype – the latter pair introduce by the Danish Mendelian, Wilhelm Johannsen.[105]

The notion that traits were inherited through discrete particles was at the heart of what De Vries called the "mutation theory". In the introduction to his ground-breaking 1901 work, *Die Mutationstheorie*, he defined the mutation theory as

> the proposition that the attributes of organisms consist of distinct, separate and independent units. These units can be associated in groups and we find, in allied species, the same units and groups of units. Transitions, such as we so frequently meet with in the external form both of animals and plants, are as completely absent between these units as they are between the molecules of the chemist.[106]

De Vries held that the mutation theory signalled a marked departure from the Darwinian emphasis on continuity between the species:

> The adoption of this principle influences our attitude towards the theory of descent by suggesting to us that species have arisen from one another by a discontinuous, as opposed to a continuous, process. Each new unit, forming a fresh step in this process, sharply and completely separates the new form as an independent species from that from which it sprang. The new species appears all at once; it originates from the parent species without any visible preparation, and without any obvious series of transitional forms.[107]

Despite this clear difference from the Darwinian perspective (which was fully developed in the work cited), De Vries still wanted to keep natural selection and adaptation to the environment in the long run as *part* of a theory of evolution – it was just not as fundamental as previously thought. Some of his followers, however, did not see the need for Darwinian evolution at all. The pioneering geneticist Thomas Hunt Morgan (1866–1945) notably saw the mutation theory as an all-out attack on Darwinism, especially in his *Evolution and Adaptation* (1903).[108] According to Morgan, environments were of no consequence for evolution whatsoever: 'its course will be determined solely by the

[105] Ibid., 264.

[106] Cited from the first English edition (1909): De Vries, *The Mutation Theory*, Vol. 1, 3.

[107] Ibid.

[108] Cf. Bowler, *Evolution*, 263.

kinds of mutations that appear'.[109] The only exception to this general rule would be grossly maladaptive traits; the point, however, remained that selection had nothing to contribute to an understanding of *variation*. That was purely a question of "genetics" and mutation.

Morgan's main contribution to Mendelism and to the emerging field of genetics sprang out of his famous experiments with the *Drosophilia* fruit fly at Columbia University. Starting in 1906, these experiments became paradigmatic, and the fruit fly has since been the most common test subject in the science of genetics. The final results and implications of Morgan's work were published in 1915 as *Mechanism of Mendelian Inheritance*, establishing Mendelian genetics on a firm experimental basis. The book formalised the Mendelian laws, connected them to experimental evidence of heredity in *Drosophilia*, and also went much further than before in the suggestion of specific mechanisms. Importantly, the work included a full discussion of the possibility that the genetic units were connected with the *chromosomes*.[110] The theory that chromosomes were involved directly with genetic heredity had already been proposed about a decade earlier, but it was with the researches of Morgan and his colleagues that it found experimental vindication that made it impossible to ignore.

The controversy between the Darwinians and the Mendelians was primarily a methodological one, and only secondarily a theoretical one. By their emphasis on biometry, the neo-Darwinians had come to emphasise *continuity* in variation, as seen at the level of whole organisms in their environments. Mendelians, on the other hand, by moving from the field to the laboratory, and working experimentally with methods closer to those of embryology, came to focus on the spontaneous and *discontinuous* change caused by mutations on the genetic level, and the distribution of these traits in populations through lawful mechanisms connected with discrete genetic units in chromosomes.[111] Taken as foundation for understanding evolutionary change these two perspectives led to very different conceptualisations of what the important factors were, and radically different positions on continuity.

* * *

[109] Ibid.

[110] Morgan et al., *The Mechanism of Mendelian Inheritance*, 108-139.

[111] For their argument with each other, see Bowler, *Evolution*, 242, 260-261.

While neo-Darwinians and Mendelians were fighting each other, they also shared a common enemy in the *neo-Lamarckians*. The differences concern the most fundamental level of what drives evolution, and the secondary level of how, exactly, inheritance and variation occur. While the solution to the latter question is the most famous claim of Lamarckism – namely the insistence on the inheritance of acquired characteristics – the most important difference for our present purposes is the fundamental question of what drives the evolution of species in the first place. While the Darwinian talks about natural selection and adaptation to the environment, and the Mendelian points to mutations and spread of discrete genetic units in the germ plasm, the Lamarckian is interested in something much more mysterious: intentions, striving, and choices. In the original theory formulated by the French naturalist Jean-Baptiste Lamarck (1744–1829), these two principles were both present: the autonomous striving of the individual, and the passing on of characteristics acquired during a lifetime through such striving, were the driving forces of evolution.[112]

However, the neo-Lamarckians did not come to their position by "returning" to Lamarck. As we so often see in modern science, the writings of the hero were re-discovered only after the position had been developed. Only then was the giant of the past re-canonised and the school of thought christened after him.[113] As historian of science Edward Pfeifer has shown, the American branch of neo-Lamarckism was part of a general revolt against the selection mechanism of Darwinism, and often allied to the explicitly *religious* dimension of that revolt. But Lamarckism was no better equipped than Darwinism to support any form of creationism, or to find a place for divine agency in evolution. In fact, Lamarck himself had built on a thoroughly materialistic foundation, and his religious attitude was one of Enlightenment deism.[114] Nevertheless, Lamarckism seemed slightly more optimistic precisely because it allowed for choice and purpose as irreducible properties in nature. As Bowler puts it,

> Lamarckism allows life itself to be seen as purposeful and creative. Living things are in charge of their own evolution: they *choose* their response to each environmental challenge and thus direct evolution by their efforts. With or without any religious implications, this is

[112] The theory is set forth in his *Philosophie zoologique*, from 1809.

[113] Edward Pfeifer, 'The Genesis of American neo-Lamarckism'.

[114] Pfeifer, 'The Genesis of American neo-Lamarckism', 164.

> certainly a more hopeful vision than that derived from Darwinism. Life becomes an active force in nature, no longer merely responding in a passive manner to environmental pressures.[115]

In discussing these aspects of neo-Lamarckism, Bowler notes in passing that there seems to be 'a connection between the aspirations of many neo-Lamarckians and those expressed by Bergson's creative evolution'.[116] Indeed there is, and one way to frame the connection is in the common aspirations to counter what I have been calling "the disenchantment of life". Henri Bergson expressed his generally vitalistic views on evolution against the backdrop of the very debates in biology and psychology that we have discussed in this chapter. It is worth stressing the point that neo-Lamarckism, precisely by allowing a non-mechanistic form of *psychology* into the evolutionary process, also bars against complete disenchantment. The push towards re-enchanted perspectives on biology through Lamarckism was realised already by the Victorian author and critic Samuel Butler (1835–1902), who came to see in it a possibility for reintroducing divine action: 'Instead of creating from without, God might exist *within* the process of living development, represented by its innate creativity'.[117] The place of mind and consciousness in evolutionary change of the Lamarckian type was stressed by many of the scientists who developed neo-Lamarckism as well, and sometimes in explicitly religious terms similar to the views of Butler. The American palaeontologist Edward Drinker Cope (1840–1897), for example, held that instead of direct design by an external Creator, 'the species design themselves as consciousness gradually extends its manifestations in the organic world. Evolution itself thus acquires a spiritual character through its ultimate purpose in developing the role of mind.'[118] Again, this is remarkably similar to the ideas of those scientists, philosophers, and authors who attempted to develop new natural theologies out of the field of evolutionary thinking in the 1920s onwards. Some of these people, notably Samuel Alexander, Conwy Lloyd Morgan, and Alfred North Whitehead, we shall meet in the next chapter.

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[115] Bowler, *Evolution*, 244.

[116] Ibid.

[117] Ibid., 245. Italics added.

[118] Paraphrased in ibid., 248. For more on this context, see James R. Moore, *The Post-Darwinian Controversies*.

The emphasis on individual agency was the decidedly most important philosophical aspect of neo-Lamarckism. Since it implied *teleology* rather than mechanism, it was also the feature that most clearly separated Lamarckism from the two other positions discussed above. The proposed inheritance of acquired characteristics was of more direct scientific relevance, however, and hence it is this aspect of Lamarckism that has been debated the most. Moreover, this trait brought Lamarckism into a very difficult position ever since Weismann developed the germ plasm theory of inheritance, and even more so after the rise of Mendelism and the increasing empirical and experimental support for a hereditary mechanism linked exclusively to chromosomes. These new directions excluded Lamarckian heredity theoretically, since everything that could ever be passed on to the next generation would already be present in the organism at conception. There is no biological mechanism for passing on traits that have been learned, or acquired through training or exercise, and the Lamarckians were never able to find an alternative mechanism that would counter or supplement Weismann's theory.[119]

Despite the lack of an operative mechanism, several experiments were designed in the attempt to prove the connection. Some of these have become infamous warnings frequently told to students as moral tales of bad science, such as the experiments of Austrian biologist Paul Kammerer, who committed suicide in 1927 after his apparently successful results of proving Lamarckian inheritance were shown to be fabrications.[120] Equally, if not more infamous is the story of Trofim Lysenko (1898–1976), who invented the ideologically correct "Marxist" variety of Lamarckian evolutionary theory (based on cooperation and group struggle rather than the "bourgeois" notion of competition between individuals), and won Stalin's favour for decades – to the complete suppression of other strands of thinking that were rapidly progressing in the West.[121] By being implemented in the planned economy, Lysenko's experimentation had tragic effects far beyond the laboratories when his new technique of "vernalization" failed to

[119] Cf. Bowler, *Evolution*, 243-244.

[120] Whether these fabrications were committed by himself or by someone else, without him knowing. The tragic story of Kammerer has been masterly told by Arthur Koestler, in *The Case of the Midwife Toad* (1971).

[121] Bowler, *Evolution*, 252-253.

give any results and instead led to severe crop failures with an aggravation of an already deadly famine as the final result.

Apart from these tragic episodes, there were also other intriguing examples of experimental work on the Lamarckian hypothesis. Perhaps the most intriguing one was conducted by none other than William McDougall. Starting in 1927 and continuing for seven years, McDougall ran experiments with learning in rats at the psychology department of Duke University. His aim was to find out if the offspring of rats that had already learned to run through a maze would learn the task faster than rats whose parents had not acquired this skill. The report on these experiments, published in three articles in 1927, 1930, and 1933, gave a positive verdict on the Lamarckian hypothesis.[122] McDougall's astonishing results did not go unnoticed by the biological community. An article published in *The American Naturalist* in 1931, for example, described McDougall's work with much fanfare:

> [a] revolutionary and important conclusion has been reached on the basis of experimental results by the eminent psychologist, William McDougall. … If his data and inferences become established, McDougall will have inaugurated a revolution in genetics even more far-reaching than the one inaugurated by [Hermann Joseph] Muller when he increased the rate of mutation in Drosophila by means of x-rays.[123]

Muller's discovery of x-ray mutagenesis earned him a Nobel Prize. If McDougall's findings would have been accepted, they would have been equally worthy of the honour. That did not happen, however, and instead the experiments stand as a curious contribution to a research programme that never succeeded in winning hegemony. As Bowler has noted, it was later shown that McDougall, in setting up his experiments, had 'unconsciously selected out rats that were better at running *any* maze'.[124] Mendelian and Darwinian mechanisms could therefore not be ruled out, and Lamarckism was back at square one.

Having spent some time now on the Lamarckian hypothesis as it re-emerged during the eclipse of Darwinism, we turn lastly to one of Lamarckism's allies against the

[122] McDougall, 'An Experiment for the Testing of the Hypothesis of Lamarck'; McDougall, 'Second Report on a Lamarckian Experiment'; McDougall & J. B. Rhine, 'Third Report on a Lamarckian Experiment'.

[123] T. M. Sonneborn, 'McDougall's Lamarckian Experiment', 541.

[124] Bowler, *Evolution*, 251.

Darwinians and Mendelians: the theory of evolution by *orthogenesis*. The term "orthogenesis" – coined to denote "evolution in a straight line" – was popularised by the German zoologist Theodor Eimer (1843–1898), who was originally a Lamarckian.[125] In an interesting turn of attention, Eimer had become interested in patterns of evolution that had no apparent adaptive significance. Similar to Lamarckism, his notion of orthogenesis implied that evolution operated due to forces that were *internal* to the organisms themselves. Variation is directed toward fixed end points, and thus neither the outcome of selection and adaptation processes, nor the random result of mutational leaps.[126] More than this, the internally determined striving that orthogenesis assumed was not a form of purely *utilitarian* and thus ultimately *adaptive* choices, as the neo-Larmarckians would typically claim. Indeed, orthogenetic development did not respond to environmental constrains in any way. This gave orthogenesis one strong point against the other positions, namely that it could account for species that seemed to cause their own extinction – something that was highly problematic form the Darwinian viewpoint. The classical example of this phenomenon was that of the "Irish elk". This species appeared to have gone extinct due to its antlers becoming too big and losing their adaptive value – becoming instead an evolutionary disadvantage that ultimately caused the elk's extinction.[127] This line of thinking, incidentally, exerted an influence on nascent "ecosophical" or "posthumanist" philosophy through the Norwegian philosopher Peter Wessel Zapffe (1899–1990), who likened the Irish elk's antlers with homo sapiens' capacity for thinking.[128] Just as the elk's oversized antlers would cause its ultimate extinction, so too humanity would see its final hour due to an oversized intellect, was Zapffe's pessimistic conclusion.

For this theory to work, however, one have to postulate some sort of "orthogenetic force". The Swiss botanist Carl von Nägeli (1817–1891) spoke about an "inner perfecting principle", and the American palaeontologist Henry Fairfield Osborn (1857–1935) invented the term "aristogenesis". This force is taken to account for the gradual development of traits which may not at first be adaptive, but may become so at a later point, leading to a period where the species will flourish. Eventually, however,

[125] Ibid., 253.

[126] Ibid.

[127] Ibid., 254-255.

[128] Zapffe, *Den sidste Messias* ['The Last Messiah', 1933]; cf. *Om det tragiske* ('On the Tragic'; 1941).

the traits will become non-adaptive once again, by growing too big, too smart, or too specialised in other ways. Based on the fossil record, Osborn argued that most ordinary traits work like this, including the emergence of teeth, claws, and horns.[129] Since the first early emergence of a tooth would not give any adaptive advantage, they had to emerge by other mechanisms than natural selection restricted by specific environments. The postulation of an orthogenetic force thus stepped in to explain how non-adaptive traits would arise simply out of a natural, internal tendency of specific organisms, possibly of all life, which would, when reaching a significantly high development, lead to the destruction of the species in question as the conflict with the environment and other species became too severe.

CONCLUSION

'The death of Darwinism has been proclaimed not only from the pulpit, but from the biological laboratory', Julian Huxley wrote in 1942. But, he was soon to add, 'as in the case of Mark Twain, the reports seem to have been greatly exaggerated, since to-day Darwinism is very much alive'.[130] Writing at the beginning of the 1940s, Huxley was referring to what he termed "the Modern Synthesis" in evolutionary biology, a slowly forming convergence of natural selection, Mendelian genetics, and the population statistics of the biometricians. This new synthesis formed the foundation of a new and unified science of biology, which went on to become one of the most successful scientific research programmes of the second half of the 20th century.[131]

The revised Darwinism that Julian Huxley spoke of emerged from the contested field of scientific discourse during the eclipse of the old Darwinism. Having gained a basic historical vantage point we may now systematically identify some major conceptual issues in these debates. This will help us to better understand the direction biology took towards the end of this period, and clarify the conceptual foundation of the alternatives. Furthermore, the relevance for our ongoing interest in the problem of disenchantment should become clearer, and thus provide a bridge to the following and last chapter in our discussion of the history of early 20th century science.

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[129] Bowler, *Evolution*, 255.

[130] J. Huxley, *Evolution*, 22.

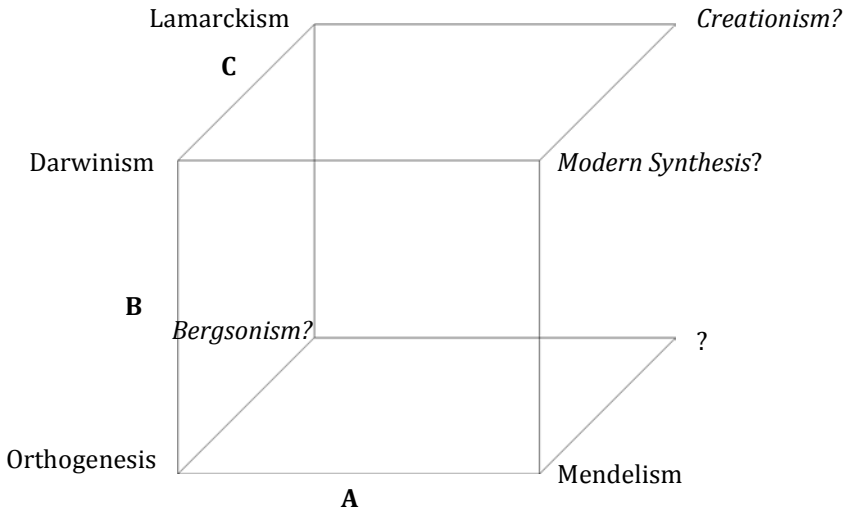
[131] For an overview of the fate of the modern synthesis over the six decades following Julian Huxley's book, see Massimo Pigliucci & Gerd B. Müller (eds.), *Evolution: The Extended Synthesis*.

The four clusters of evolutionary thinking that we have discussed all had their differences, but they may also be connected in terms of certain shared conceptual structures. For example, it is no coincidence that neo-Darwinism and Mendelism would eventually find together in the modern synthesis, despite their difference over continuity/discontinuity: they were both founded on a wholly mechanistic and materialist basis, and, as it would turn out, their difference on the question of continuity was largely a misleading pseudo-debate.[132] But the conceptual landscape is more complex than this. The neo-Darwinians' emphasis on continuity was, for example, shared by the spokespersons of orthogenesis, and by most neo-Lamarckians. Furthermore, within this "continuity cluster", Darwinians shared with neo-Lamarckians an emphasis on adaptation to the environment, but disagreed with them on *how* adaptation happened (mechanistic natural selection, vs. non-mechanistic, purposive striving). If the fault line is taken to be the question of adaptation to an environment, then orthogenesis and Mendelism emerge as allies, since both emphasised purely internal processes as driving evolution, with the environment playing little or no role in selection and variation. In short, we can draw different lines between the positions based on which one out of three major conceptual fault lines we focus on, namely "mechanism vs. teleology", "continuity vs. discontinuity", or "adaptive vs. non-adaptive" (figure 7).

By linking these three conceptual fault lines up to the problem of disenchantment, certain patterns emerge. I have suggested that disenchantment in its epistemological dimension is above all connected to mechanistic philosophy. Hence it is in positions such as the neo-Lamarckian, rejecting mechanism and occupying the depth-dimension in the figure below, that we should expect to find "re-enchanted" positions being forged. The question of continuity vs. discontinuity might at first sight also seem connected to this debate – in analogy to the debate in quantum mechanics – but I hold that in this context, the relevance is largely illusory. While certain *theistic* positions on evolution would be interested in discontinuity, and allow for God to fill the gaps (we may think of the obsession of certain creationists with holes in the fossil record), the type of discontinuity which the Mendelians pressed was of a quite different order. In the

[132] Bowler notes that the Mendelians tended to exaggerate the point about discontinuous evolution, particularly due to personal debates between leading spokespersons of the two schools, who were squaring off for authority of the field. See Bowler, *Evolution*, 264-265.

lingo of genetics, it was on the level of *phenotypical expression* that one would expect discontinuity. These sudden leaps were nevertheless fully explained by a genetic substructure. No god of the gaps was needed, nor any mysterious and incalculable force to guide the process. To the contrary, Mendelism offered an explanation of why there would naturally be gaps in the fossil record: new species were after all formed by sudden genetic mutations, or "saltations".



A) ***Continuous – non-continuous***
B) ***Adaptive – non-adaptive***
C) ***Mechanistic – non-mechanistic (teleology)***

Figure 7: Evolutionary positions placed in a three-dimensional diagram, showing their position on the axes of continuity, mechanism, and adaptation. This representation shows that a number of alternative positions are logically possible. The "Modern Synthesis" could be represented as a compromise between Darwinism and Mendelism, and hence placed to the right of Darwinism on the *A* axis. We could also place non-mainstream positions such as creationism/intelligent design as an adaptive, non-mechanistic, non-continuous position (we could call it "speciation by divine intervention"), placing it on the top, deep, right end of the cube. The position on the deep end of the lower left seem to fit positions like Bergson's "creative evolution", differing from Lamarckism primarily by a lack of stress on adaptation to an environment. The only corner left blank is the lower, deep, right corner. The reason appears simple enough: a non-continuous, non-adaptive, and non-mechanistic evolution would hardly qualify as evolution at all.

Lamarckism, on the other hand, seemed more hospitable to enchantments by its embrace of teleology in place of mechanism. It opened up a space for considerations of consciousness and will as operative concepts in the evolutionary process. It is no

coincidence that someone like McDougall was simultaneously engaged with Lamarckian evolutionary theory and the defence of teleology in psychology. What is more, McDougall was sometimes considered a vitalist, and did at times refer to Driesch's theory of entelechy as well as to the more evolutionary oriented position of Henri Bergson. This overlap of interest is not coincidental, but rather points to a set of affinities connected with the general rejection of the disenchantment of life.

In the case of McDougall, these affinities were furthermore supported with the discipline of psychical research. As I will argue at length in chapter nine, McDougall may in fact be seen as the godfather of the modern discipline of experimental parapsychology.[133] His combined interests were, however, part of a broader pattern: Both Driesch and Bergson were involved with parapsychology, and biological vitalism and non-reductive theories of mind seem to play a significant role in the whole enterprise of psychical research from its inception in the late 19th century. All of this will be discussed properly in Part Three, where we will see that 20th century parapsychology has been founded upon a general rejection of disenchantment, and has exhibited a curious ability to attract perspectives from other scientific disciplines that have tended in that general direction. Meanwhile, it is particularly among the non-mechanistic, teleological, and mind-oriented perspectives on modern science that we expect to find extrapolations to "new natural theologies". It is to this development we shall turn next.

[133] See also Asprem, 'A Nice Arrangement of Heterodoxies'.

6

Five Schools of Natural Theology: Reconciling Science and Religion

> It … is almost a duty of the scientific man, however little he may desire or feel himself competent for the task, to attempt to rebuild as well as destroy, and to state, so far as he can, what is his view of the matters in which hitherto the priest and the philosopher have, with insufficient knowledge of external nature, been left to themselves.
>
> Frederick Soddy, *Science and Life* (1920), 150.

INTRODUCTION: THE REVIVAL OF NATURAL THEOLOGY

Natural theology was an integral part of natural philosophy in the early modern period and up until the Enlightenment. This changed with the professionalization of the natural sciences in the 19th century. Victorian scientific naturalism was forged in the context of the new profession's boundary-work and emancipatory programme against clerical control of education and knowledge production, and in this context, theology became a "negative Other" of natural science. In addition to this, the post-Kantian philosophy of science that dominated much thinking in epistemology after the Enlightenment had clearly separated religion and science as two distinct domains, not to be conflated or mixed.

After a few decades of relative obscurity, however, natural theology re-emerged with new vitality, although not as an integrated part of research. Instead, new institutional platforms were created where scientists, philosophers and scholars could meet to discuss religious and spiritual implications of current research. In the context of new institutions, lecture platforms, and publication forums, a number of new natural theologies were forged from the raw materials provided by contemporary debates in the natural sciences. By taking scientific knowledge about the natural world as a starting point for developing new positions on human values, ethics, the afterlife, and the relation between the divine and humanity, these new natural theologies clearly broke with the dictums of a disenchanted world. In this chapter, which concludes our

discussion of the problem of disenchantment in the major scientific disciplines, we shall look closer at the systems of new natural theology that emerged at the beginning of the 20th century, relate them to their scientific contexts, and discuss the major institutions and forums in which they were created.[1]

I will distinguish between five schools of natural theology that were present in the period between 1900 and 1939. These five schools will be presented as a series of successive speculative practices, sometimes overlapping, but generally following a historical succession which mirrors conceptual developments in the natural sciences that we have discussed in previous chapters. Some of the schools were highly influential at the time, but have since withered away or been cast into oblivion. Some influenced later streams of thought, but have largely been forgotten in their original form due to the source amnesia of later authors. Others have become canonical and foundational to schools of thought that are still very much alive today, with only minor adaptations and supplements added by later disciples.

My main objective is to describe and analyse the situation in a specific historical period, explain the conditions from which these schools arose, and their relation to each other and to broader cultural concerns. I will however also, as far as possible, try to assert the fate of each school in a broader historical perspective. This, I believe, will contribute to our current understanding of science-religion debates, as well as the intellectual and cultural background and scientific foundation of a number of trends that are still with us today. Before presenting each of the five schools, however, I will first discuss the major institutions that facilitated the new natural theologies. At the end of the chapter, I will suggest some striking theological trends in these schools, which reveal intriguing structural similarities with what is nowadays often seen as "Western esotericism".[2]

1 The Institutions of Natural Theology

The new natural theologies of the early 20th century were for the most part created by scientists and philosophers, with the occasional humanities scholar, theologian, and

[1] This project should be seen as a continuation of Peter Bowler's foundational work in *Reconciling Science and Religion* (2001).

[2] See especially Hanegraaff, *Esotericism and the Academy*.

autodidact pulling his[3] part. If we define natural theology substantially, in terms of the intellectual effort to do speculative theology on the basis of natural knowledge, then we might identify this activity in a number of locations inside and outside of academia, and at a number of different levels of scholarship – including in newspaper and magazine articles, Theosophical, occult, and spiritualist publications. If, however, we focus on more systematic and self-conscious attempts to mobilise scientific and academic professionals to invest in natural theology, then our perspective gets considerably narrower, and a small number of institutions and publication outlets emerge as particularly important. On the institutional level, I will focus on three forums in particular. In order of importance, these are the Gifford Lectures in Natural Theology, the Society for Psychical Research (with daughter and sister societies), and the Alchemical Society. Let me briefly justify the selection.

The Gifford Lectures

The Gifford Lectures provide the most important site for the developments that concern us in this chapter.[4] Held at the four Scottish universities of Aberdeen, Edinburgh, Glasgow, and St. Andrews every year since their inception in 1888, these lectures have engaged such scientists and philosophers as William James, Hans Driesch, Henri Bergson, Arthur Eddington, Alfred North Whitehead, Niels Bohr, and Werner Heisenberg to speak about the benefactor's, Lord Adam Gifford, desired topic: natural theology. Several of the lecture series later became ground-breaking publications in their own right. James' *Varieties of Religious Experience* and Whitehead's *Process and*

[3] This is not a biased use of the personal pronoun: new natural theology has been an overwhelmingly male endeavour. This is only to be expected, as it reflects the heavily gendered nature of the academic professions at the turn of the century.

[4] No definite or sufficient academic monograph on the Gifford Lectures exists. The best and most up to date work on the Lectures is Larry Witham, *The Measure of God* (2005), but it is written for a wider audience and cannot be counted as a sufficiently critical work of scholarship. The only other full length discussion is Stanley Jaki's *Lord Gifford and his Lectures* (1986), which provides a centenary overview of the Lectures and provides more of an insider's celebratory history than a critical historical analysis of the Lectures' place in the broader histories of religion and science in the West. Such a work, when written, would potentially be a very valuable addition to our understanding of the science-religion discourse over the last century.

Reality remain among the most famous and are still widely read, but we shall encounter a great number of other important works produced in this setting.

The origin of this highly influential lecture platform is found in the will of Lord Adam Gifford (1820–1887), a successful barrister and judge from Edinburgh. Gifford was known as a brilliant and clear-thinking man by his contemporaries, and had a reputation as an advocate and judge who cherished common sense above technicalities and bureaucracy. In addition to his professional and personal reputation, however, he was also known for his deep interest in "philosophical religion", and was widely used as a lecturer on the topic. His interest in such topics was influenced by the American transcendentalist Ralph Waldo Emerson (1803–1882), whom Gifford had seen lecturing in Edinburgh in 1843.[5] Upon reaching old age, Gifford would recall Emerson's lecture as 'far from impressive'; nevertheless, it had kindled a long-lasting interest which would lead him to donate a big sum of money at his death to form the Lectures in Natural Theology.[6]

A sum of £ 80,000[7] was bequeathed to Scotland's four existing universities, towards the establishment of 'a Lectureship or Popular Chair for "Promoting, Advancing, Teaching, and Diffusing the study of Natural Theology," in the widest sense of that term'.[8] Lord Gifford's will continued to "define", in a highly ornate way, what was meant by natural theology 'in the widest sense', namely:

> The Knowledge of God, the Infinite, the All, the First and Only Cause, the One and the Sole Substance, the Sole Being, the Sole Reality, and the Sole Existence, the Knowledge of His Nature and Attributes, the Knowledge of the Relations which men and the whole universe

[5] Witham, *Measure of God*, 19-20.

[6] Ibid., 19.

[7] In 1888 this was a significant amount. If going by a simple retail price index calculation – i.e. the relative price of typical products that an average consumer would buy – it is equal to £6,950,000 in 2010. However, to estimate the full economic significance of the sum as set aside for funding a specific project, we should look at its relation to the total UK economy. In that case, measured as a share of the Gross Domestic Product, £80,000 was as large a share of the 1888 economy as £87,500,000 was in 2010. Calculations and analysis are obtained from measuringworth.com.

[8] Lord Gifford's will, dated 21 August 1885, has been made available on the Gifford Lectures' website: http://www.giffordlectures.org/will.asp (accessed 5 December, 2011).

> bear to Him, the Knowledge of the Nature and Foundation of Ethics or Morals, and of all Obligations and Duties thence arising.[9]

Gifford gave instructions for how the lecturers were to be chosen, and what kind of conditions were to apply. Importantly in an age when British universities were still largely held under a regime of confessional censorship, the lecture platform was to be completely non-confessional and liberal: 'The lecturers appointed shall be subjected to no test of any kind, and shall not be required to take any oath, or to emit or subscribe any declaration of belief, or to make any promise of any kind; they may be of any denomination whatever'.[10] Furthermore, Lord Gifford stressed the role that science was to have in these lectures, writing that the lectures should

> treat their subject as a strictly natural science, the greatest of all possible sciences, indeed, in one sense, the only science, that of Infinite Being, without reference to or reliance upon any supposed special exceptional or so-called miraculous revelation. I wish it considered just as astronomy or chemistry is.[11]

Theology was to be based on a rigidly scientific basis; knowledge through "revelation" was to be strictly avoided. In other words, Gifford wanted no separation of metaphysics and ethics from the domain of scientific inquiry. Despite the claim of being non-denominational and requiring no formal oath, test, or commitment from their speakers, the lectures were thus clearly based on a specific theological *agenda*. Above all, the Gifford Lectures were predicated from the beginning on a rejection of the intellectual sacrifice, as we defined it in chapter one. Ethics, metaphysics, and theology not only *could*, but *ought* to be considered 'just as astronomy or chemistry' – that is, simply as special fields of natural science. Any claim to special divine revelation was a disqualification, and there was no room for strict biblical literalism.

Another very crucial set of directions which Gifford stated in his will concerned outreach and popularization. First of all, 'lectures shall be public and popular, that is, open not only to students of the Universities, but to the whole community without matriculation, as I think that the subject should be studied and known by all, whether

[9] Lord Gifford's will, unpaginated.

[10] Ibid.

[11] Ibid.

receiving University instruction or not'. The fees should be kept as small as possible, to ensure that as many as possible would be able to attend, since Gifford consider that 'such knowledge [of natural theology], if real, lies at the root of all well-being'.[12] Finally, a publication scheme was encouraged: patrons were advised to 'make grants from the free income of the endowments for or towards the publication in a cheap form of any of the lectures'.[13] These directions and recommendations would turn out to be crucial for the future influence of the Gifford Lectures.

The affordable volumes that would come out of the lectureships with the help of Gifford's money have reached a wide readership and had an impact on thinking about religion and science both in educated lay audiences and among specialists of the many disciplines touched upon by the lecturers. The importance of the financial contribution cannot be overestimated; without Lord Gifford's lectures, books such as *Process and Reality* and *Varieties of Religious Experience* would never have been written. It is crucial to note in this regard that it was not so much any pre-existing interest in "natural theology" on behalf of all of these thinkers that brought them to the Gifford's, nor – in the beginning at least – any big honour associated with lecturing in this setting. Rather, it appears that the considerable amount of money paid to lecturers was absolutely essential in establishing its position. As the German theologian Otto Pfleiderer remarked about his own lectures in 1894: 'The honor is not great but the honorarium is colossal'.[14] Over the years the relative size of the honorarium would decline, but for each illustrious scholar recruited to the programme in this early phase, the institution gained in social and cultural capital.[15] By the middle of the 20th century, the Gifford Lectures had reached the point where money would be unnecessary to secure the best speakers; with the honour firmly established, and the original mission perhaps more liberally interpreted, the Gifford's have since gone on to produce solid scholarship in

[12] Ibid.

[13] Ibid.

[14] Quoted in Jaki, *Lord Gifford and His Lectures*, 10.

[15] We are in other words talking of a standard transaction of monetary capital for social and cultural capital. Cf. Pierre Bourdieu, 'The Forms of Capital'.

disciplines such as history, anthropology, mainstream philosophy, and popular science.[16]

THE SOCIETIES FOR PSYCHICAL RESEARCH

Another institution that has had a great influence on the development of new natural theologies in the early 20th century is the Society for Psychical Research, and its many daughter and sister organisations in Europe and the United States. Although these societies will be given a much more detailed treatment in Part Three of this book, a brief introduction is in order already at this stage. The original British SPR was established in 1882 by a group of scholars and friends based at the University of Cambridge, and was dedicated to the study of "psychic phenomena" from a strictly scientific perspective.[17] Among the psychic phenomena that interested the society were the mediumistic phenomena connected with spiritualism, the phenomena of mesmerism, haunted houses and apparitions, and "thought-transference". Separate committees were initially established to allocate resources to each of these domains.

The society soon attracted an impressive number of Victorian scientists, scholars, and intellectuals. In addition to the coterie of Cambridge scholars who had founded the society – especially professor of philosophy Henry Sidgwick, and the classicists Frederic Myers and Edmund Gurney – one would find physicists such as William Barrett and Oliver Lodge as central members, while later Nobel laureates Lord Rayleigh, J. J. Thomson, Charles Richet, and Henri Bergson would all at some point feature on lists of

[16] Among the later lecturers we find, for example, the Cambridge historian Owen Chadwick, whose influential *Secularization of the European Mind* started as Gifford lectures. The very influential analytic philosopher Alfred J. Ayer's lectures resulted in the book *The Central Questions of Philosophy*, which is a general introduction to analytic theories of knowledge. Hannah Arendt lectured on aspects of thinking, judgment and free will, Paul Ricoeur lectured on hermeneutics, the anthropologist of religion Mary Douglas lectured on 'Claims of God', and the high-profile cosmologist, humanist, and sceptic Carl Sagan produced his crypto-pantheistic *Varieties of Scientific Experience* in the context of the Gifford lectures. In addition, several scholars who are considered experts on the relation between science and religion from a historical perspective have given Gifford lectures in the last few decades, notably Ian Barbour (*Religion in an Age of Science*, 1989), John Hedley Brooke, and Geoffrey Cantor (co-authors of *Reconstructing Nature*, 1995). A full list of lecturers, topics, and publications can be obtained from the Gifford Lectures' website.

[17] Standard histories of this period include Gauld*, The Founders of Psychical Research*; Turner, *Between Science and*; Oppenheim, *The Other World*.

members and officers of the society. Arthur Balfour, Sidgwick's brother-in-law and later Prime Minister of the United Kingdom, was a long-standing member and even acted as president of the society between 1892 and 1895. The SPR was very much an *elite* institution, founded and run by members of high society. Balfour – who is today perhaps best known for drafting the 1917 Balfour Declaration when he served as foreign minister – is a good illustration of the overlap between the various institutions of new natural theology, for he was also invited to give a Gifford Lecture in 1914, published as *Theism and Humanism*, while still serving as vice-president of the SPR.

British psychical research should furthermore be seen as part of the general movement of Victorian naturalism, but one that *challenged* the dominant position taken by such demagogues as John Tyndall and T.H. Huxley. Whereas Huxley had launched the concept of "agnosticism" to describe the proper naturalistic attitude towards religion and the various claims related to religion in all its forms, psychical researchers emphasised the empirical dimension of religious claims. To these researchers, the survival of the soul after death, for example, was a strictly empirical question that could be investigated through scientific experiments with spiritualist mediums, and through the study of apparitions and so-called "veridical hallucinations".[18] Furthermore, one believed that knowledge of the soul's qualities and potentials, far beyond that of normal physical existence, could be achieved through the study of such "supernormal" faculties as telepathy and clairvoyance, vindicating a minimum of "spirituality" on which a "scientific religion" could be based. It is particularly in this aspect that psychical research is of interest to the study of new natural theologies, for it has created a discourse on religion, science, and human experience that has impacted on a number of other fields, and been interconnected with several schools of new natural theologies.

Psychical research provided a number of forums for developing and disseminating knowledge that fed into the broader field of natural theology. The *Journal of the Society for Psychical Research* (1882 to present) and the *Journal of the American Society for Psychical Research* (1907 to present) are important sites, as are the proceedings of these societies. Furthermore, a number of important books were written and published by members of the SPR, building on the experimental and theoretical discourses of psychical research, and popularising their possible philosophical

[18] On psychical research's contestation of agnosticism, see especially chapter seven. Cf. Asprem, 'Parapsychology', 637-640; idem, 'A Nice Arrangement of Heterodoxies', 133-135.

implications. This kind of work, furthermore, bridged many disciplines, especially physics, biology, and psychology. The SPR thus helped facilitate speculative exercises of new natural theology intersecting with all of these fields.

The Alchemical Society

The Alchemical Society is the final institution to be included here. In comparison with the two other institutions it is by far the smallest, in terms of size, duration, output, and impact alike. The Alchemical Society only existed for three years, from 1912 to 1915, cut short by the Great War. Nevertheless, it deserves inclusion here because it is a striking example of a highly significant trend. As was the case with the SPR, the Alchemical Society was structured as a normal scientific association, with a board of officers, open meetings with papers and responses, and the publication of proceedings which included reviews of related science publications in addition to the papers presented at general meetings and minutes of discussions. When one looks at the society's membership, however, one finds that it included not only chemists and historians of chemistry and alchemy, but also Theosophists, psychical researchers, and other occultists.

This intriguingly mixed membership was reflected even on the level of officers.[19] The president Stanley Redgrove was a professional chemist, but also wrote numerous books and articles on spiritual implications of modern science. The occultist and self-taught scholar Arthur Edward Waite was an Honorary Vice-President of the society, and so was Isabelle de Steiger, a central occultist in the late-Victorian occult revival, with connections to people such as Mary Anne Atwood, Anna Kingsford, and H. P. Blavatsky.[20] De Steiger was also involved with the SPR, as was the ordinary member of council, Clarissa Miles. Miles was a dowser of some repute, and had also published research on telepathy in the SPR journal in 1908.[21] As if there were not a strong enough occult presence in the Alchemical Society already, Ralph Shirley, the editor of *The Occult*

[19] For the list, see 'Report on First General Meeting', *Proceedings of the Alchemical Society*, Vol. 1.1, 1.

[20] For Waite and de Steiger's involvement with the Alchemical Society, see Morrisson, *Modern Alchemy*, especially chapter one. For de Steiger's place in the history of Victorian occultism, and particularly her relation with Mary Anne Atwood, see Godwin, *Theosophical Enlightenment*, 232, 240-241, 245-246. See also her autobiographical work, de Steiger, *Memorabilia*.

[21] Clarissa Miles, 'Experiments in Thought-Transference'. On her work on dowsing, see the review by two psychical researchers in William Barrett and Theodore Besterman, *The Divining Rod: An Experimental and Psychological Investigation*, 160-165.

Review, was appointed Honorary Vice-Secretary in March 1913 – thus formalising ties between the Alchemical Society and Shirley's occult publishing venture.[22]

The Alchemical Society is an interesting institution because it gives a face to a borderland between science and occultism that was important for the development of some of the new natural theologies we will be discussing. Furthermore, the link with *The Occult Review* is important, as it adds a social and institutional dimension to the overlap in content. Redgrove, the president of the Alchemical Society, was one of the decidedly most productive contributors to *The Occult Review*. A count reveals that he published as many as 244 items in total between 1908 and 1940. These were articles, notes, and book reviews covering topics as diverse as modern physics and chemistry, alchemy, mathematics, modern philosophy, Rosicrucianism, hermeticism, mysticism, magic, psychical research, spiritualism, and 19th century occultism in general. The review literature is particularly interesting, as it shows how new natural theologies were being received by the occultist press.

2 Five Schools of Natural Theology

The renewed interest in the early 20th century in combining natural science with religion led to the creation of five distinct, although sometimes overlapping, schools of natural theology. In this lengthy section, I will discuss each of these schools in turn, relating them to each other and to the shifting context of scientific discovery, innovation, and controversy that we have considered in preceding chapters. In a roughly chronological order of appearance, the five schools that will be discussed are: 1) ether metaphysics; 2) psychic enchantment; 3) theologies of emergence; 4) modern alchemy; and 5) quantum mysticism. All of these schools exemplify the desire to pursue religion on the grounds of science, or to create a worldview in which there is a harmonious and overlapping relationship between the two. In doing this, they represent rejections of disenchantment, born, as a rule, from the world of academia.

I will discuss the major publications that went into the creation of these theologies, present the main ideas of the works, the development and provenance of these ideas, and situate the works and their authors in the appropriate contexts.

[22] 'Report on the Third General Meeting', *Proceedings of the Alchemical Society*, Vol. 1.3, 33.

Although much of the material that makes up each of these schools has been created in the context of one or several of the institutional spaces discussed above, other contexts also exist and will be discussed when relevant.

(I) Ether Metaphysics

With "ether metaphysics" I refer to the attempt to make use of the physical concept of the ether to connect science and religion, and to suggest answers to a wide range of metaphysical questions. The questions typically addressed by ether metaphysics may be distinguished as three connected types: 1) *cosmological* questions concerning the nature and connectedness of the cosmos, and the relation between the divine, the world, and humanity; 2) questions of *anthropology*, concerning the nature of human beings, "souls", and the relation between minds and bodies; 3) questions of *cognition* or *epistemology*, concerning the potentials of humanity's mental faculties and their capacity for knowledge, both of the world, of other minds, and of "higher realities".[23]

This school is an intriguing and on several levels paradoxical one. It has by far the oldest roots of the five schools distinguished here, being largely a product of 19th century physics. In the 20th century, theories of ether were becoming increasingly anachronistic. As far as support from the scientific community goes, the metaphysics of ether in the 20th century was thus largely a one-man show, run by Sir Oliver Lodge (1851–1940) – a respected physicist in the late Victorian period who became increasingly involved with spiritualism and psychical research after the turn of the century. The development of ether metaphysics as a school of natural theology in the early 20th century was thus in a collaboration between a very limited number of scientists, and a larger number of occultist writers, basing themselves on a physical worldview that already belonged to the past.

The ubiquitous role of the ether in Victorian physics was briefly mentioned in chapter four. As a result of Thomas Young's celebrated 1801 double-slit experiment, which had successfully produced an interference pattern between two beams of light demonstrating that light behaved as waves rather than particles, physicists had inferred the existence of a luminiferous ether to explain how light waves could travel through seemingly empty space. The scientific legitimacy of the ether was thus built on

[23] I have previously developed this characterisation of ether metaphysics in Asprem, 'Pondering Imponderables'.

hypothetical inference and deduction rather than direct observation. This use of deductive reasoning and inference – breaking with Newton's famous dictum to "feign no hypothesis" (*hypotheses non fingo*), and the whole inductivist empiricism of natural philosophy[24] – would become absolutely central to the metaphysics of ether as well. In the context of Maxwellian physics, the ether was eventually used to explain much more than just the phenomena of optics.[25] Electricity, magnetism, and even matter itself were all understood as essentially etheric phenomena. Thus, Lord Kelvin launched the theory that matter was composed by vortices in the ether, while Hendrik Lorentz and J. J. Thomson temporarily defended an "electromagnetic worldview" in which the ether was essential.[26]

A school of ether metaphysics was already taking shape among Victorian physicists, related to the success of Maxwell's field theories and the explanatory power of the ether.[27] For some, this took on the proportions of natural theology, at least by suggesting answers to questions of cosmology. One notable example is found in the correspondence between the Irish ether physicist George Johnston Stoney (1862–1911) and his nephew, the prominent Maxwellian physicist George FitzGerald (1851–1901).[28] Stoney connected ether mechanics with an idiosyncratic reading of George Berkeley's subjective idealism. Unlike the classical mechanics of Descartes and Newton, where motion and matter together constitute the fundamentals, Stoney contended that only motion was fundamental. Pondering the question of what, then, was really moving, Stoney and FitzGerald were compelled to think in terms of thoughts in a divine mind: 'Can we resist the conclusion that all motion is thought?', FitzGerald asked.[29] Could it be that the phenomenal world is produced by motions in the great universal "Mind of God", or, as FitzGerald would put it, 'that all Nature is the language of One in whom we live,

[24] See P. M. Heimann, 'Ether and Imponderables', 64; on the shift from induction to hypothetic deduction, see Larry Laudan, 'The medium and its message'; cf. Laudan, *Science and Hypothesis*, 130.

[25] For a full discussion, see Hunt, *The Maxwellians*.

[26] For the etheric vortex theories of atoms, see ibid., 212-216. For the electromagnetic worldview, see McCormmach, 'H. A. Lorentz and the Electromagnetic View of Nature'.

[27] For discussions of this aspect of ether physics, see especially Cantor, 'The Theological Significance of Ethers'; Noakes, 'Religion and Politics in Late-Victorian Physics'; Grean Raia, 'From Ether Theory to Ether Theology'; Asprem, 'Pondering Imponderables'.

[28] Hunt, *The Maxwellians*, 98-99.

[29] FitzGerald quoted in Hunt, *The Maxwellians*, 99.

and move, and have our being'?[30] Another notable contribution to this genre was the controversial *Unseen Universe*, published anonymously in 1875 by physicists Balfour Stewart and Peter Guthrie Taite. This book used the ether to defend the existence of vast invisible realms beyond the known universe, sustaining Christian notions of deity, the spiritual body, and an afterlife, even attempting to make supernaturalism consistent with the laws of thermodynamics. It will be remembered from chapter two that thermodynamics was one of the scientific grounds on which Victorian naturalism claimed to discredit the possibility of supernatural agency. Although controversial, this type of metaphysical speculation was entirely in line with an ether physics that was explicitly trying to dispense with the category of "matter" as being fundamental, while basing everything in physics on an invisible, intangible, all-pervading, interpenetrating, and absolute substance.

The situation was already much different by the end of the first decade of the 20th century. At that point, Einstein's special relativity had emerged on the scene, and the wave theory of light was again losing ground to the new, vaguely corpuscular theory of light quanta. Maxwell's field theories were shown to be expressible in Einstein's new relativistic language, which had no use for an absolute reference frame. Apparently, there was not much need for the ether anymore, and the concept was gradually phased out of physics.[31] The new natural theology of ether therefore had to be based on quite different conceptual resources, in addition to the old Victorian physics. This was largely supplied by occultism, spiritualism and psychical research, forming a curious feed-back loop with Oliver Lodge's writings. Exploring the emergence of this modern variety of ether metaphysics takes us through a curious network of relations, connecting Theosophical speculations with the impact of trench warfare during WWI, spiritualist séances with Maxwellian field theory, and psychical research with an increasingly outmoded ether physics.

While the whole field of ether metaphysics is broad and includes literature spanning scientific as well as occult publications, the classics of the genre considered as a new natural theology are found in the post-1900 oeuvre of Oliver Lodge.[32] By the turn

[30] Ibid.

[31] Note that this was a slow process, and that Lodge was not alone among older generation to still cling to a notion of ether. However, he was certainly the most extreme one. Cf. Goldberg, 'In Defense of Ether'.

[32] For details on Lodge's life, consult his biography, Jolly, *Sir Oliver Lodge*.

of the century, Lodge had left practical work in physics, dividing his efforts between administrative tasks as principal of Birmingham university (from 1900 to 1919), work in psychical research (he was president of the society from 1901 to 1903, and again in 1932), delivering popular lectures, and writing numerous works of popular science and intellectual debate. It was the beginning of a tremendously voluminous career as a writer, and it is only possible to discuss a few selected pieces from his vast production. Among the popular books Lodge authored before the outbreak of the Great War we find several titles that deal with natural theology in the sense of arguing for the compatibility of science and Christian theology, including *The Substance of Faith Allied with Science* (1907), *Man and the Universe*, (1908), *Immortality of the Soul* (1908), and *Reason and Belief* (1910). In addition to these, Lodge published in the general area of science and metaphysics, notably his widely discussed *Life and Matter* (1905), which provided a thorough criticism of Ernst Haeckel's monistic materialism. As Lodge wrote in the introduction, the book's aim was entirely metaphysical, 'intended to formulate, or perhaps rather to reformulate, a certain doctrine concerning the nature of man and the interaction between mind and matter.'[33] The book *Modern Problems*, published in 1912, collected several 'essays on debatable subjects' that he had published elsewhere or given as lectures over the years. In addition to essays on politics, war, economics, and social reform, there were essays on philosophical issues such as free will and determinism, and one engaging with the philosophy of Henri Bergson.[34] Lodge also published a number of more mainstream popular science books. One of these was the short book *The Ether of Space* (1909). It was first and foremost an introduction to ether theory – and an astonishingly outmoded introduction to electrodynamics for 1909 – but it also contained some hints of ether metaphysics, such as when it suggested the connections between the mind, senses, ether, and 'Acquaintance with the External World'.[35]

It was, however, with the Great War that Lodge's career would take a turn towards a more exotic and unusual form of natural theology in which spiritualism was

[33] Lodge, *Life and Matter*, viii.

[34] The latter, entitled 'Balfour and Bergson', was originally written on invitation to the *Hibbert Journal* earlier in 1912, as a response to Arthur Balfour's criticism of Bergson. Lodge knew both men personally through their involvement with psychical research. See Lodge, *Modern Problems*, 24-53.

[35] Lodge, *The Ether of Space*, 17-26.

merged completely with ether theory and the vitalistic notions that he had defended in works such as *Life and Matter*. After losing his son Raymond in the trenches in 1915, Lodge joined séances with a number of spiritualist mediums who claimed to attain contact with the fallen young soldier. Convinced that he had indeed communicated with his deceased son through different mediums, Lodge went on to write and publish the best-selling book, *Raymond, or Life after Death* (1916), detailing his experiences from these séances. Lodge soon became a spiritualist celebrity – a status he shared with the author Arthur Conan Doyle, who had also lost a son in the trenches – and he would spend much time lecturing on the survival of death, the spiritualist hypothesis, and psychical research. In 1919 he published *The Survival of Man: A Study in Unrecognised Human Faculty*, where an overview of psychical research up until that point was given to reinforce and defend his now clearly stated conviction that the survival of man after bodily death was 'based on a large range of natural facts'.[36] The same year Lodge published an intriguing article in *The Hibbert Journal*, entitled 'Ether, Matter, and the Soul', in which ether theory was used in a more explicit manner to fit the spiritualist hypothesis of survival with a physical world picture based on ether. A few years later the book *Ether & Reality: A Series of Discourses on the Many Functions of the Ether of Space* (1925) appeared, which once again defended ether theory and expounded a fully-fledged ether metaphysics. After several similar publications,[37] reiterating the major points, Lodge's life's work was finally completed with *My Philosophy* (1933), a book that was still interpenetrated by ether, now decades after his colleagues had moved on to very different fields of inquiry. Lodge's continued preoccupation with the theories of a bygone age has led one scholar to describe his final book as 'a Victorian work in the midst of the twentieth century'.[38]

What were the major ideas expressed in this vast literature, and in what sense do they constitute a new natural theology? To begin with, Lodge's "ether of space" becomes the mediator not only of optics and electromagnetism, but also a means for connecting the fields of religion and science. This is most clear in books such as *Ether and Matter*

[36] Lodge, *The Survival of Man*, viii.

[37] Including titles such as *Why I Believe in Personal Immortality* (1928), *Phantom Walls* (1929), *Beyond Physics, or The Idealization of Mechanism* (1930), *The Reality of a Spiritual World* (1930), *Demonstrated Survival* (1930), and *Conviction of Survival* (1930).

[38] David B. Wilson, ' The Thought of Late Victorian Physicists', 33

and *My Philosophy*, but it is present in the argumentation in much of his other work. To look closer at the precise functions played by ether, and how Lodge finds that science supports specific forms of "theology", we should return again to the distinction between cosmological, anthropological, and cognitive aspects of the metaphysics of ether. The *cosmological* dimension of ether metaphysics was already present in the 19th century, as the cases of Stoney, FitzGerald, Stewart and Tait attest to. Lodge's general perspective on this does not diverge much from theirs, in that he, too, may be seen to operate with an idealistic notion of the ether – something which truly becomes apparent in his *Beyond Physics*, subtitled *The Idealisation of Mechanism*. The ether's cosmological function is clear enough: it embraces the entire cosmos, and interpenetrates all objects. This much was standard physics. In Lodge's version, building on the vortex theories of Lord Kelvin and others, the ether was also the origin of all things, including matter, and thus served as a kind of *prima materia* or *Urstoff*.[39] In addition, Lodge considered the ether to be the only truly permanent and unchanging entity in the universe.[40] In a poetic turn of language, heavily laden with religious sensibilities, Lodge would describe the emotional reaction spurred by pondering the cosmic ether in the following way:

> By a kind of instinct, one feels it [the ether] to be the home of spiritual existence, the realm of the awe-inspiring and the supernal. It is co-extensive with the physical universe, and is absent from no part of space. Beyond the furthest star it extends; in the heart of the atom it has its being. It permeates and controls and dominates all. It eludes the human senses, and can only be envisaged by the powers of the mind.[41]

The latter sentence refers to the fact that the ether cannot be seen or experienced in any way, not even manipulated through experimental procedures, but that it can only be known through theoretical inference. For Lodge, this entirely abstract concept was nevertheless felt to be 'the home of spiritual existence'.

To understand the full scope of Lodge's ether metaphysic, however, we must see the cosmological function in relation to the anthropological. These connections were summed up in a rather pompous manner at the end of *Ether and Reality*, where Lodge

[39] For the development of etheric vortex theories of atoms, see e.g. Bruce J. Hunt, *The Maxwellians*, 212-216.

[40] E.g. Lodge, *Life and Matter*, 36.

[41] Lodge, *Ether and Reality*, 173.

wrote that ether 'is the primary instrument of Mind, the vehicle of Soul, the habitation of Spirit. Truly it may be called the living garment of God.'[42] To understand what exactly was meant with this, we need to look closer at the place of the ether in Lodge's thought about human minds, souls, and of life itself. Central to Lodge's more idiosyncratic ideas on these topics is the concept of the "etherial body". This concept developed through Lodge's writings between 1900 and 1933, mostly in the context of psychical research, and especially in response to encounters with spiritualism.

The earliest confirmed instance of Lodge using the term "etherial body" is in his 1902 presidential address to the SPR.[43] At this point, the term had already been developed in the literature of Theosophy. Part of a broader reorientation of Theosophical doctrine, the second generation Theosophists Annie Besant and Charles Webster Leadbeater reinvented the society's esoteric doctrines on subtle bodies, and developed a new conception of the "etherial body" or "double", which was supported by the same type of inferential reasoning that was common in ether physics.[44] Outside of the more obscure literature of the Theosophical journals, one could read about the concept in two recent publications by Charles Webster Leadbeater, *The Astral Plane* (1900), and *Man and His Bodies* (1902). It is likely that Lodge knew about these publications and was familiar with their basic content, seeing that there was much overlap between the society he was a president of, and the Theosophical society. Nevertheless, we do not find even a single reference to Theosophical sources in his work. This could very well be a deliberate act of sanitisation; at any rate, we are left with nothing more than a suggestion, and must instead proceed to look at the way Lodge develops this concept in the context of his own work.

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[42] Lodge, *Ether and Reality*, 179.

[43] This predates the first mention noted by intellectual historian David Wilson, who dated the term to Lodge's 1908 book on *Science and Immortality*. Wilson, 'The Thought of Late Victorian Physicists', 34; cf. Lodge, 'Presidential Address [March 1902]', 47.

[44] See especially Besant, 'Man and His Bodies' (two installations, 1896). Central to this reorientation on the lines of late-Victorian physics was the programme of 'occult chemistry' initiated by Leadbeater and Besant around the same time. As we shall see in chapter eleven, this Theosophical research programme was entirely based on ether physics; when the first monograph publication of results appeared in 1909, it even came with an appendix entitled 'The Aether of Space' – the only scientist referenced in it was Sir Oliver Lodge. Besant & Leadbeater,'Appendix' to *Occult Chemistry*, vii-viii. Cf. Besant, 'Occult Chemistry' (1895).

Lodge's first mention of etherial bodies must be seen in the context of a crisis in psychical research at the turn of the century. Not only had two of the SPR's leading members, Henry Sidgwick and Frederic Myers, died within a short lapse of time, but there was also a growing realisation that one of the society's most central explanatory concepts had failed.[45] This was the idea that telepathy, a term coined by Myers, was the operative function in séance phenomena, and that telepathy operated through a mechanistic transmission of "thought-waves" propagating through the ether, in exact analogy to Maxwellian field theory. This theory, which was offered as an alternative to the spiritualistic hypothesis of survival (it was assumed that mediums telepathically received information from the living instead of actually communicating with the dead), had been conceived of and expressed by Lodge himself in the 1880s.[46] However, as experimental evidence of telepathy from card guessing trials and other relatively small-scale quantitative studies began to pile up, the researchers started noticing a feature that could not be reconciled with the theory of electromagnetic brain-waves. The distance between sender and receiver in telepathic communications appeared to be without relevance to the results obtained, thus contradicting what was known about electromagnetic phenomena in general. Indeed, it smacked of the very "action-at-a-distance" model that the British ether physicists so much deplored.[47]

Instead of distrusting the data – either for failing to reveal a true correlation with distance, or for being due simply to methodical errors or trickery in the first place – the SPR physicists were compelled to suggest increasingly more esoteric mechanisms and interpretations to account for the results. In successive presidential addresses to the Society over the years 1902-1904, both Lodge and William Barrett (president in 1904) dismissed the brain-wave hypothesis, while opening up for increasingly speculative interpretations. According to Barrett, the hypothesis of brain-waves was 'only unscientific talk, we know of nothing of the kind'.[48] Lodge now seemed to agree,

[45] For a thorough discussion of the crisis in psychical research at the beginning of the century, see chapter eight below.

[46] Lodge, 'Experiments in Thought Transference', 191. For a closer discussion of explanatory strategies in psychical research, see chapter eight.

[47] Cf. Noakes, 'The "World of the Infinitely Little"', 327-328.

[48] Barrett, 'Presidential address [January 29th 1904]',333.

speculating that mediumistic phenomena might be purely 'spiritual and psychical events'.[49]

By the early 1900s Lodge had thus already come to reconsider the spiritualistic hypotheses of survival. In addition to the scientific reasons discussed above, he had personal reasons for taking this turn. Lodge's original scepticism towards mediums had been tried already in 1889, when he attended sittings with Leonora Piper, the Boston medium sent for testing at Cambridge by William James.[50] During these sessions, Lodge believed he was brought into contact with his dead aunt; as he later recounted he had a hard time explaining how the medium was able to replicate the aunt's whole mannerism and way of speech down to the most quirky little detail. In his autobiography Lodge remembered how the 1889 investigations of Mrs Piper had him 'thoroughly convinced not only of human survival, but of the power to communicate, under certain conditions, with those left behind on the earth'.[51]

It was "trance lucidity", or the *mental* phenomena of spiritualism, that prompted Lodge to take the survival hypothesis seriously.[52] The "physical phenomena" had always been less popular among SPR researchers, always remaining under the suspicion of trickery and fraud. Lodge was no exception, readily admitting that '*apports*, scents, movements of objects, [and the] passage of matter through matter, bear a perilous resemblance to conjuring tricks', further cautioning that 'in so far as mediums find it necessary to insist on their own conditions [during séances], so far they must be content to be treated as conjurers'.[53]

There was, however, one highly contested physical phenomenon Lodge would admit some reality for: the phenomenon of "materialisation". Again Lodge could trace his conviction back to personal experience. In 1894-1895 he had witnessed the Italian medium Eusapia Palladino (1854–1918) producing "ectoplasm", an ethereal (at least in the non-technical sense) substance often pouring forth from the medium's own

[49] Lodge, 'Presidential Address [1903]', 19.

[50] For Lodge's response to these sittings, see Lodge, *The Survival of Man*, 190-343; cf. Jolly, *Sir Oliver Lodge*, 92-95.

[51] Lodge, *Past Years*, 279.

[52] Cf. Lodge, 'Presidential Address [1902]', 38-43.

[53] Ibid., 48.

organism, in which parts of an evoked spirit could take on physical form.[54] Sometimes it would involve the production of "spirit arms", extending from the body of the medium. In other cases the ghostly figure of a spirit would show its face, or even present itself in full figure to the sitters. The typical approach of SPR researchers had been to suspect conscious fraud in such cases. Lodge, on the other hand, commented that he 'could conceive it possible, if the evidence were good enough, that some other intelligence or living entity, not ordinarily manifest to our senses' did in fact produce these unusual phenomena.[55] The exact origin and nature of such intelligences he remained quite undecided about: they could be deceased human beings, but equally well discarnate, 'extraspacial' beings – or even extraterrestrials from far off inhabited planets![56]

It was in this precise context that Lodge first advanced the idea of an etherial body: from a physical point of view, materialisations could be allowed if the discarnate entities possessed 'what may be called an etherial body'.[57] If in possession of such a body, it was even likely that the entities were already 'in constant touch with our physical universe', since the ether is continuous with matter. This was not so far from the views expressed by Tait and Stewart's *Unseen Universe* in 1875. During materialisation, however, an etherial body could 'utilise the terrestrial particles which come in its way, and make for itself a sort of material structure capable of appealing to our ordinary senses'.[58] Sometimes, Lodge added, the physical form acquired by an etherial body might be too weak to be seen by our eyes, but still solid enough to be captured on a photo. This would account for the hugely popular "spirit photography",

[54] For Lodge and the sittings with Palladino, see Jolly, *Sir Oliver Lodge*, 101-107; Grean Raia, 'From Ether Theory to Ether Theology', 19-21; Oppenheim, *The Other World*, 150-1. In view of the controversy that would ensue after Palladino was caught cheating during tests in Cambridge in 1895, it is perhaps telling that Lodge never mentioned Palladino in his discussions of mediums in *The Survival of Man*, or in his autobiography, *Past Years*.

[55] Lodge, 'Presidential Address [1902]', 45. Among respected psychical researchers in the early 20th century there is really just one other who must be mentioned for taking materialisation phenomena seriously, namely the German Baron Albert von Schrenck-Notzing. On Schrenck-Notzing, see Wolffram, *Stepchildren of Science*, 131-190. Cf. my discussion in chapter eight below.

[56] Lodge, 'Presidential Address [1902]', 50.

[57] Ibid., 45. Lodge consistently spells this word "etherial". I will stick to his spelling when discussing his concept explicitly; when engaging a more general discussion of the concept, however, I will allow the more simplified spelling "ether body".

[58] Lodge, 'Presidential Address [1902]', 45.

which, Lodge hastily added, he personally had yet to be convinced was a genuine phenomenon.

As we saw in the brief overview of Lodge's oeuvre, the Great War dramatically increased his commitment to spiritualism for yet more personal reasons. During this phase of his life, a more developed idea of the etherial body was put forth. A particularly clear example is found in an article published in the liberal Christian *Hibbert Journal* in 1919, entitled 'Ether, Matter, and the Soul'. The first part of the article was a popular-scientific account of the nature of electricity, electrons, and matter. Now fourteen years after Einstein's papers on special relativity had been published, the central concept of this account was still the ether: matter was still viewed in the Victorian nomenclature of 'modified ether'.[59] But Lodge was prepared to go much further than this. Continuing his previous speculation on the etherial body, Lodge hypothesised that 'every sensible object has both a material and an ethereal counterpart'.[60] While we only have direct, everyday knowledge of *one* of these bodies, 'we have to infer' the etherial counterpart.[61] As Lodge put it a few years later: 'Matter we apprehend early, when young children, but as we grow up we infer the Ether too, or some of us do'.[62] This, no doubt, paralleled the centrality of hypothetical inferences in ether physics in general.

The most striking innovation from his earlier writings on the etherial double was Lodge's suggestion that to every material object – not just human beings, or even living things – there was a corresponding etherial body. This means that we must picture Lodge's cosmology as containing an entire parallel universe of unseen things, consisting of perfect and eternal duplicates of all that exists (and, indeed, that has ever existed) in our material, corruptible world. Lodge now held that this extension of the concept was necessary from a purely physical point of view. Without a corresponding ether body 'there could be no unity or coherence or any individual object at all – nothing but a dust of disconnected atoms'.[63] Among its many mechanical properties, the ether was, after all, supposed to be 'the medium of cohesion, it is that which holds the particles together'.[64]

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[59] Lodge, 'Ether, Matter, and the Soul', 256.

[60] Ibid., 257.

[61] Ibid.

[62] Lodge, *Ether and Reality*, 166.

[63] Lodge, 'Ether, Matter, and the Soul', 258.

[64] Ibid.; cf. idem, *Ether and Reality*, 160.

Lodge seemed to be saying that the ether bodies gave *form* to *substance*; furthermore, these forms were eternal and indestructible, but nevertheless real, and not mere abstractions. In a sense, the world of ideas had been made immanent through the ether.

The individual, form-providing ether bodies shared the 'perfect properties' of the all-pervading, undifferentiated ether of space: it was permanent, perfect, indestructible; the ether knew no 'temporal disabilities', such as fatigue, friction, or dissolution.[65] This had implications for a topic even more profound: the nature of the human soul. At the one hand we seem close to a philosophical conception of the soul as the "form" or "defining essence" of man; on the other, we find in Lodge's conception a possible foundation for a spiritualist understanding of the survival of personality.

Lodge complained that philosophical and theological notions of the human soul have always been vague, unclear, and incomprehensible. Now for the first time, by considering the etherial counterpart to the human body, we have the prospect of an intelligible conception of the soul: 'We shall find, I think, that we possess, all the time, a body co-existent with this one that we know – a body essentially substantial and related to space and time, not really transcendental, but yet in no way appealing to our present senses'.[66] This last point is important for understanding the epistemic status attributed to "the soul" thus conceived. Since the etheric body is immanent, not transcendent, it becomes a possible object for scientific investigation – even though we cannot perceive it directly with our ordinary senses. By conceiving the soul in terms of ether, it becomes an object of "scientific" natural theology. It must, however, also be seen in connection with the desire for a scientific validation of the spiritualist survival hypothesis. Providing an alternative to the mechanistic hypothesis of telepathy was very much a reason why Lodge had proposed ether bodies in his 1902 address to the SPR, as we have seen. In his 1919 essay the connection was explored somewhat further; Lodge contended that there was interaction with *both* etherial and material bodies during "psychic actions", 'and not only with one, as hitherto contemplated by perhaps the majority of philosophers'.[67] While theoretical constructs of telepathy had only referred to communication between living brains, Lodge now offered a model where the ether body played a more active part.

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[65] Lodge, 'Ether, Matter, and the Soul', 256, 258.

[66] Ibid., 258.

[67] Ibid., 259.

If the ether body is involved with psychic actions generally – and one of the principal properties of the ether is its perfection and indestructibility – could it be that, after death, the 'etherial portion … actually continues its psychic connection, apart from any material counterpart'?[68] This, Lodge contended, 'is a question for evidence, not for dogmatism'.[69] Such evidence, furthermore, could be found in the research programme of the SPR, particularly through carefully crafted investigations of spiritualist phenomena.

When psychic investigation guided by ether metaphysics had become sufficiently advanced, Lodge argued, one could expect astonishing *technological* breakthroughs and applications. There is a hint of a possible future technology when Lodge writes that:

> The interactions which are possible between the matter of this planet and the etherial bodies or souls associated with spiritual intelligence will ... be understood; and with this knowledge, under proper regulation, a new power will be gained; and this new power will be utilised and put into action.[70]

Lodge does not specify what this power would be, but among the consequences of its discovery he lists knowledge of the meaning of human life, and 'familiar intercourse across the veil or gulf of death'. It is clear that he envisages some kind of psychic power, related to the control of the ether body, which would grant efficient access to higher knowledge.

* * *

There is one final aspect of Lodge's conception of the ether body that we need to consider, namely its connection with the concepts of "Mind" and "Life", and the relation to vitalism. David Wilson noted that, for Lodge, "life", "mind", and "spirit" all refer to 'the same human entity'.[71] While it is true that there is a close connection, equating the concepts comes at the price of overlooking some nuances that, although they might seem trivial at first, are actually quite significant. Grean Raia rightly gives attention to

[68] Ibid.

[69] Ibid.

[70] Lodge, 'Ether, Matter, and the Soul', 259.

[71] Wilson, 'The Thought of Late Victorian Physicists', 33 n. 13.

the fact that Lodge's conception of these terms were informed by various philosophies of life and mind prominent in the early 20th century, especially Bergson's vitalistic response to the theory of evolution, along with the psychological theories of Myers and James.[72] All these thinkers belonged to Lodge's social and intellectual network within the SPR, and he personally knew and corresponded with them.

Following Bergson's example, Lodge considered life and mind to be closely connected concepts. Firmly placed in a vitalist discourse, life is seen as an "animating principle", possessing the ability to animate matter by creating "protoplasm".[73] From there, however, Lodge embraced a concept of evolution, and viewed mind as emerging from animated matter. When mind has thus "come into" physical reality, mind had the mysterious power of exerting force over matter, manipulating and reorganising it through the movement of animated bodies. This vitalistic notion, not unlike Hans Driesch's *entelechy*, which we discussed in the previous chapter, was present in Lodge's thinking at least since his 1905 attack on Haeckel's philosophy. In 1908 he expressed it like this:

> Life is not matter, nor is it energy, it is a guiding and directing principle; and when considered as incorporated in a certain organism, it, and all that appertains to it, may well be called the soul or constructive and controlling element in that organism.[74]

In his 1912 article discussing the philosophy of Bergson, Lodge made it clear that "life", although conceived vitalistically, should *not* be seen as adding anything to matter in terms of energy or force; instead, life works through *directing* what is already permanently present in the world, and it always works *with* the laws of physics, never in any way against them – or *despite* them, as Bergson sometimes seemed to suggest.[75] This, in the end, brings Lodge to consider the familiar concept of *teleology* as being at the base of life, and particularly in its aspect as mind.[76] As Grean Raia has adequately summed it up:

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[72] Grean Raia, 'From Ether Theory to Ether Theology', 39 n. 28.

[73] See Lodge, *Ether and Reality*, 159.

[74] Lodge, *Immortality of the Soul*, 22.

[75] Lodge, *Modern Problems*, 39-41.

[76] Ibid., 42-53.

> Mind was Life, but in a higher condition. As Life advanced to Mind, and Mind likewise attained higher states of what Lodge [following Bergson] called "becoming", Mind organized more and more complex states of matter. Thus, there was a kind of tandem evolution, matter and mind (form and content), advancing together in reciprocal complexity, two parts of a unified whole.[77]

The connecting medium for all of this vitalistic and teleological activity was the ether and the etherial body. Lodge was now prepared to go further than recognising the ether as being merely a medium. Instead he speculated that the differentiated ether of the etherial body was the real seat of animation itself, the "vessel" of both life and mind: 'it is the Ether which is really animated, and … this animated ether interacts with matter; I suggest that the true vehicle of life and mind is Ether, and not matter at all.'[78] Lodge held the vitalistic "animating principle" to be itself an etheric phenomenon with an existence independent of matter, as opposed to something that had itself evolved from matter following ordinary mechanistic principles. It was entailed in evolution, true, but rather as its active, igniting spark, not as its product. Although he would sometimes define his vitalistic conception closely to Bergson's *élan vital*, Lodge had argued along these lines for some time already. For instance, a vitalistic conception was at the base of his attack on Haeckel's "monistic philosophy" at the beginning of the century.[79] Lodge's vitalistic orientation was thus independent of Bergson. Furthermore, while it also bears resemblance to Driesch's vitalism, Lodge never refers to Driesch, or indeed to any other major or explicit vitalistic philosopher besides Bergson. Instead, as I will suggest later, theories of vitalism seem to have been "home grown" in British psychical research.

The location of the life principle and the connected concept of mind, that 'higher kind of animation',[80] in the ether rather than in matter is a fundamental assumption of Lodge's argument for the possibility of survival. Lodge considered ether bodies to be indestructible, just like the undifferentiated ether of space. If life and mind, therefore, were dependent on the material bodies only for purposes of interacting with the

[77] Grean Raia, 'From Ether Theory to Ether Theology', 39.

[78] Lodge, *Ether and Reality*, 166.

[79] The vitalistic thrust is particularly clear in the rejection of Haeckel's purely materialistic conception of the origin and development of life. See Lodge, *Life and Matter*, chapters III, VI, IIX, X.

[80] Lodge, *Ether and Reality*, 162.

material world, but not for their existence as such, then it was indeed very likely that life, mind, and even personality, could survive the death of the material body – even in a more unrestrained and perfect constitution, dwelling perhaps eternally in the "unseen universe" of etherial existence.

* * *

This discussion of Lodge's ether metaphysics has taken us through a bewildering set of arguments, presented in a number of different contexts, and dealing with a number of conceptual issues, from ether physics to vitalism, from telepathy to the survival of death. The concept of etherial bodies stands at the heart of these discussions. It is through this concept, more than any other, that Lodge's thinking becomes a full scale natural theology based on a metaphysics of ether. The ether body is offered to explain the relation between the soul and the body, the nature of life and mind, and, through general reflections on the nature of ether, the concept is used in support for eternal life. Most importantly in this context, however, it is based on a *physical* concept, the luminiferous "ether of space", which is supposed to bring all the connected issues into an empirical domain reachable by science. It is in this, more than anything else, that ether metaphysics constitutes a natural theology.

Ether metaphysics provided a worldview that emphasised the immanence of the divine, through the all-encompassing, interpenetrating, but invisible ether. This medium functioned as a kind of "world soul"; it was the seat of animation in general, the source of life, and also the plane on which much mental functioning was thought to take place. Furthermore, by the existence of etherial bodies and the possibility of working on the etheric plane, where the soul properly had its domain, possibilities were opened for attaining higher forms of knowledge: telepathy and clairvoyance were possible in one's own lifetime through such uses of the ether, as was contact with the dead and with other "extraspacial" beings and "spiritual intelligences" that might exist in the vast reaches of the etheric realm. There was even the promise that such esoteric epistemologies might one day be tamed by a sufficiently advanced psychical research, and tapped through new psychic and etherial technologies for the benefit of humanity at large. These technologies would eventually make it possible to answer those eternally vexing questions of human values and the meaning of life.

Ending this discussion, we should briefly reflect on the broader contemporary and historical impact of ether metaphysics. Lodge's work was widely read in his own days, and was part and parcel of the wider popular interest in spiritualism between the World Wars. He provided a leading example for those who wished to connect spiritualism, science, and a liberal form of Christianity. However, the metaphysics of ether was built on scientific resources that were getting increasingly obsolete while the system was being constructed. Its scientific basis had been rendered completely obsolete by the time Lodge wrote his final book on the subject in 1933. Meanwhile, a new generation of scientists and popularisers were writing about such exotic things as wave/particle duality, the relativity of space and time, complementarity, and the uncertainty principle. In this period of rapid scientific change, ether metaphysics was already doomed to its demise. Its impact on mainstream audiences since has thus been minimal.

There is, however, one segment in which the etheric school of natural theology has remained influential, and that is in occultism. A kind of feedback loop was formed between Lodge and the Theosophists, in which his earlier work influenced the reconceptualization of "ether bodies" and the "etheric plane" in Theosophy, before these, in turn, were adopted by Lodge himself and given further legitimacy through his work in psychical research and ether metaphysics. Indeed, if we want to consider ether metaphysics in a broader sense, and not only through its most "scientific" and "elite" spokesperson, we must also integrate the occult milieus in which these ideas were incubated. We have already seen that the developments in second generation Theosophy are very significant in this respect. But we may also extend the focus to look at the way ether theories were received and discussed in a major "non-denominational" occultist press such as *The Occult Review*. When I went through the entire catalogue of articles, and looked closer at the twenty articles published in this occultist journal with "ether" or "etheric" in their titles, there was one striking observation to be made: while the earliest articles, particularly those appearing between 1914 and 1918, deal with typical Theosophical speculations on "etheric planes" and bodies, the later ones, published in the 1920s and 1930s seem to be *more* interested in the scientific aspects of ether. At first sight, this is contrary to what one would expect, given that ether theories were getting more rather than less marginal from a purely scientific standpoint. The reason for the switch in focus in the occultist interest in the ether, however, becomes

evident when one takes a closer look: the journal published a review of Lodge's *Ether and Reality* in 1925, which sparked a number of follow-ups and a significant late reception of ether theory.[81] The editorial of the following issue, for example, was dedicated to 'The Ether of Space', clearly using it as an occasion to revive esoteric darlings of the past:

> The ether, though postulated by the Brahmins of those days, and regarded as a reality in the teaching of mediæval mystics such as Boehme, for instance, in his mystical philosophy, has not been accepted and recognized in the scientific world generally until the commencement of the present century, and even now it is regarded by some merely as a plausible hypothesis. Recent discoveries, however, which have a very practical bearing on everyday life, such, for instance, as wireless telegraphy, seem absolutely to demand its recognition; for, apart from the assumption of its existence, the *modus operandi* on which the whole system is based appears to be inconceivable.[82]

It is rather remarkable to note the utter ignorance displayed by the author (most likely the editor Ralph Shirley) as to the history of the ether in physics; the claim that ether 'has not been accepted and recognized' by science 'until the commencement of the present century', and that '[r]ecent discoveries' have finally made it acceptable, clearly amounts to turning the whole history of ether physics on its head. A better understanding of the works discussed is evident in some of the other articles published in *The Occult Review* during this period, particularly those written by Stanley Redgrove, the founder of the Alchemical Society. In 1930, Redgrove published a review of another of Lodge's books, *Beyond Physics*, in which he not only lauded the vitalistic and idealistic conceptions of Lodge's physics, but also delivered a sharp criticism of the aging physicist's failure to take into account the newer developments of his discipline.[83]

In the context of *The Occult Review*, Redgrove was however pretty much alone in stressing the importance of looking at newer theories than those of Victorian ether physics. It is interesting to note that articles on relativity are much more scarce than articles on ether, even as late as the 1920s and 1930s. The first one appeared in 1921, and was a book review of a popular introduction to general relativity, again written by

[81] Edith Harper, 'Review of *Ether & Reality* by Oliver Lodge'.

[82] Editor [Ralph Shirley], 'The Ether of Space', 1.

[83] Redgrove, 'The Apotheosis of Ether', 22.

Redgrove. Another observation is that, when "relativity" *was* mentioned, we find completely *metaphorical* extrapolations of the concept into philosophy, experience, and mysticism that appear completely uninformed of the physical theories. Relativity was at the very least being discussed in *The Occult Review*, which is more than can be said about quantum theory: somewhat surprisingly, quantum mechanics appears not to have been mentioned at all. On this basis it seems that the reception of relativity and quantum physics in occultism was a very slow process, and that occultists largely remained concerned with the physical theories of yesteryear rather than with what was happening in contemporary physics.[84]

(II) Psychic Enchantment

Several strong lines of interconnection and overlap exist between ether metaphysics as it was developed in the writings of Oliver Lodge and what I will here call "psychic enchantment". They share an origin in late-Victorian psychical research, but represent different directions of development. While ether metaphysics developed out of the physicist branch of psychical research, the school I will discuss here grew out of the other major strand of the prospective discipline, oriented towards psychology, with links to physiology, biology, and philosophy. In the early stages of psychical research, the pioneers of this stream of thought were figures such as Frederic Myers and William James. However, at the beginning of the 20th century, new generations would pick up the thread, and develop new variations of psychic enchantments. This section will introduce some main figures, developments, and motifs, but a full treatment of parapsychology will be saved for Part Three.

Seen as a school of new natural theology, psychic enchantment may be defined as the attempt to take poorly understood, often "unconscious" sides of the human mind, together with various types of "anomalous" behaviour and experience, as a starting point for actively countering a "disenchanted worldview". The frequent postulation of anomalous hidden powers of the mind is central to this branch of natural theology. As these capricious and mysterious powers of minds and organisms ran counter to the mechanisation and "disenchantment of life", they were offered up as a possible

[84] Additional indications of this trend will be discussed in chapter eleven, where I discuss the reception of relativity and quantum physics in the context of second-generation Theosophy.

foundation for an alternative, reenchanted worldview. The scientific context is found in the discourses discussed in chapter five, especially the vitalism controversy in biology, the eclipse of Darwinism, the methodological debate in psychology, as well as in philosophical discussions concerning free will and determinism. However, it is within psychical research and parapsychology that these academic discourses are fully utilised in support of agendas for reenchantment.

Since psychical research and the development of modern parapsychology in the 1920s and 1930s will be considered at length in the next part of this study, I will restrict myself at present to introducing some major trends. A fuller discussion of their development, particularly in relation to the attempts of making parapsychology "truly scientific" and an integral part of the official university system, will be provided in Part Three.

* * *

A convenient starting point for the natural-theological school of psychic enchantment may be found in the monumental but peculiar work of the classicist turned pioneer psychical researcher Frederic Myers (1843–1901).[85] As Frank Miller Turner has put it, 'Myers was determined to discover by the methods of science the existence of the human soul, which earlier religious and philosophical writers had apprehended intuitively'.[86] To Myers, and a generation of other intellectuals standing in the midst of the late-Victorian conflict between science and religion, the old dogmas of the institutionalised religions had lost their appeal, and seemed now empty and unconvincing. Furthermore it seemed that any religion of the future would have to be based on solid scientific foundations. This, of course, is a familiar theme by now, and it is precisely the effort to realise it that made psychical research produce several avenues of natural theology. Myers' own contribution rested not only on carefully collecting data, testing mediums, and building up a base of evidence for survival, but also on developing a complicated psychological and metaphysical theory of the mind.

[85] For a recent and imaginative discussion of Myers' approach to psychical research, see Jeffrey Kripal, *Authors of the Impossible*, 36-91. However, cf. F. M. Turner, *Between Science and Religion*, 104-133. See also my own discussion of Myers in subsequent chapters.

[86] Turner, *Between Science and Religion*, 107.

Central to Myers' theory was the concept of the "subliminal Self", which was only spelled out in its full form in the two volume work, *Human Personality and Its Survival of Bodily Death*, published posthumously in 1902. According to Myers, consciousness may be divided into a sub- and a supraliminal spectrum, the subliminal containing all urges, instincts, desires, motivations, and faculties that are below the threshold of our everyday awareness. While this category corresponds roughly with the notion of the "unconscious" in psychoanalysis, Myers also suggested that there was an entire "self" hidden in the subliminal, and that the extraordinary supernormal occurrences and faculties studied by psychical research happened around individuals in whom the subliminal self and various subliminal faculties were arising to the surface and mastered at will.

It was also with reference to this conception that Myers located the theoretical plausibility of survival. The possibility of survival was, furthermore, connected to Myers' concept of the "metetherial", meaning '[t]hat which appears to lie after or beyond the ether; … the spiritual or transcendental world in which the soul exists'.[87] To this was connected a form of vitalism, not unlike the one which Lodge developed – no doubt partially under the influence of Myers. The subliminal and the metetherial were supposed to explain the origin of life, conceived of as a particular kind of "energy" or "force", but also its ultimate indestructibility:

> earthly Life itself embodied as it is in psycho-physically individualised forms is, on the theory advanced in these pages, a product or characteristic of the ethereal or metetherial and not of the gross material world. Thence in some unknown fashion it came; there in some unknown fashion it subsists even throughout its earthly manifestation; thither in some unknown fashion it must after earthly death return.[88]

In a review of *Human Personality* published in the journal *Mind*, psychologist William McDougall observed that Myers' motivation in writing the book had been not

[87] Myers, *Human Personality*, Vol. I, xix.

[88] Ibid., 97. It should be noted that Myers' theory of the subliminal Self had a deep impact on William James, and particularly on his personal views on religion and psychology, as expressed in the final chapter of *Varieties of Religious Experience*, and in its postscript. See especially James, *Varieties of Religious Experience*, 511-519, where he defends a religious conception following the general lines of Myers' example.

only to systematise the data on survival, but also to suggest how it may be incorporated into a unified theory, which can be harmonised with 'the general body of accepted scientific truth, and especially with the well-founded conclusions of modern biology and psychology'.[89] This was, as we have seen in the previous chapter, an area in which McDougall would also spend much of his time speculating. As he clearly observed concerning Myers' project,

> the belief that a man's personality can survive the death of his body implies that that personality is, or is the manifestation of, some entity that is capable of living and manifesting essentially similar forms of activity, namely thought, feeling and emotion, when its relations with the body are destroyed by the dissolution of the latter. On the other hand, modern biology has taught us to regard the body as an aggregation of individuals and its activities as the resultants of the co-ordination of the activities of these individuals … .[90]

More precisely, Myers required some sort of mind/body dualism, even life/body dualism, to support the thesis of survival. At the same time, since Myers wanted to stay on good terms with established science he also needed to come to terms with the monistic view inherent to the conception of life in most of contemporary biology. Shortly put, Myers, and much of the programme of psychical research with him, simultaneously needed the best of two apparently irreconcilable worlds. This basic tension has remained at the core of psychical research ever since, and it is precisely in this tension that psychic enchantments seem to thrive: it seeks the scientific credibility of the established sciences without the implications of disenchantment that often seemed attached to them.

The strong connection between psychical research and vitalism is a clear albeit little explored example of this inherent tension. It is hardly coincidental that both of the period's two most well-known proponents of neo-vitalism, the (ex-)embryologist Hans Driesch and the philosopher Henri Bergson, gravitated towards psychical research during the 1910s and 1920s. Both even served as presidents of the SPR: Bergson in 1913 – the same year as he gave his Gifford lectures in Edinburgh – and Driesch in 1926 and 1927. As we saw in the previous chapter, neo-vitalism arose within scientific

[89] McDougall, 'Critical Notice of *Human Personality*', 515.

[90] Ibid., 515.

embryology around the turn of the century, with Driesch's experiments with sea urchin eggs, and the development of his concept of entelechy. As such, it was for a while discussed as a serious position on the nature of life within the embryological community. Driesch's notion of entelechy quickly grew out of touch with the scientific developments of biology, however, and instead of changing his position, Driesch kept his ideas, left the field, and drifted towards the more hospitable milieus of psychical research and philosophy of nature. Already in his Gifford lectures, published as *The Science and Philosophy of the Organism* (1908), Driesch had insinuated that entelechy could shed light not only on the development of living organisms, but also on the obscure question of life after death.[91] As he drifted further away from professional biology in the years that followed, this initial hunch was developed into a full scale research program by the 1920s.

As was the case with a number of other figures we have met, it was the Great War and the difficult social and cultural situation ensuing that galvanised Driesch's already latent interest in parapsychology. Meeting Eleanor Sidgwick, the widow of the co-founder of the SPR, Henry Sidgwick, just before the war in 1913 had already made a deep impression on Driesch, but it was only in the 1920s that his views on the matter became explicit and publicised.[92] Placed within the broader cultural crisis of Weimar Germany, particularly with the momentous revolt against "mechanism" and call for "holism", Driesch found a new context for his vitalistic theories, and a way to expand its area of application.[93] In 1923, Driesch published a programmatic article entitled 'Der Okkultismus als Neue Wissenschaft' in the German occult and parapsychological periodical, *Psychische Studien*, in which he argued that various "occult" phenomena could best be understood through his concept of entelechy. Indeed, by abandoning the mechanistic conception of life and mind in favour of his vitalistic theory, phenomena such as clairvoyance, telepathy, telekinesis, and even materialisation could be understood as the concentration and direction of the "life force" outside of the organism of certain exceptional individuals. On the pages of this article, and through a number of papers, lectures, articles and books written in the 1920s and 1930s, Driesch developed

[91] Driesch, *Science and Philosophy of the Organism*, Vol. 2, 260-263.

[92] Wolffram, 'Supernormal Biology', 154-155.

[93] See Wolffram, *Stepchildren of Science*, 191-232 ; cf. Harrington, *Reenchanted Science*. See also my discussion of the Forman thesis in chapter four.

what Heather Wolffram has aptly characterised as a "supernormal biology".[94] During this period he would also attend controlled séances in the laboratory of the eccentric baron Albert von Schrenck-Notzing, who focused explicitly on "physical" phenomena such as materialisation, ectoplasm and telekinesis.[95] Although Driesch followed the mainstream of Anglophone psychical research on this matter, keeping a generally sceptical attitude, he nevertheless had a theory ready for the controversial phenomena in his concept of entelechy: granted that the normal development of organisms is pushed by a non-material directing force, which organises and builds matter along certain teleologically pre-arranged paths, then the only exceptional thing with the physical phenomena is that they happen outside of the boundaries of the organism itself. Some of the phenomena, however, happen in clear continuity with the organism, such as when ectoplasm is excreted from various orifices of the medium's body. On Driesch's vitalistic reading, all these phenomena could be characterised as "exteriorisations" of the life principle.[96]

In 1926 Driesch was elected president of the SPR, even though he had never performed any actual research in the area himself.[97] His lack of practical experience was, however, never a concern; Driesch's theoretical work on vitalism had already been enthusiastically received by the psychical research community, and it was considered to be a significant enough contribution to the field to warrant Driesch's presidency. As Wolffram suggests, Driesch 'challenged the epistemological assumptions of a number of sciences including biology and psychology', and his theory of entelechy seemed to offer a 'scientific basis for the rejection of both mechanism and materialism'.[98] In fact, the conscription of Driesch's theories was part of a much larger tendency within psychical research to incubate vitalistic notions of mind and life as potent psychic enchantments. As mentioned already, Bergson had been elected president of the SPR just before the outbreak of war. Bergson's brand of vitalism, which had its scientific and philosophical

[94] Wolffram, 'Supernormal Biology', 149-150, 155-157; cf. idem, *Stepchildren of Science*, 197-208.

[95] See e.g. Schrenck-Notzing, *Materialisations- Phänomene* (1914); idem, *Physikalische Phänomene des Mediumismus* (1920). Cf. Wolffram, *Stepchildren of Science*, 131-189.

[96] Driesch, 'Presidential Address: Psychical Research and Established Science', 173; idem, *Parapsychologie*, 101-102; cf. Wolffram, 'Supernormal Biology', 156-157.

[97] Driesch, 'Presidential Address', 172.

[98] Wolffram, 'Supernormal Biology', 155-156.

basis in evolutionary theory rather than in experimental embryology, based on the concept of *élan vital* and focused mainly on notions of creativity, freedom, and novelty (it notably excluded not only mechanism, but teleology as well), was already being discussed in the British psychical research community – as evidenced by the previously cited essays of Arthur Balfour and Oliver Lodge.

The SPR did not strictly *need* to import fashionable vitalistic philosophies from the continent, as they merely added to strongly vitalistic leanings already present in the work of nearly all the main British psychical researchers. The works of Myers, Lodge, and William McDougall all display strongly vitalistic attitudes to the concepts of life and mind. McDougall's defence of "animism" and purpose-driven evolution, explored in the previous chapter, was partially defended on grounds of psychical research.[99] In the 1922 edition of his *Vitalismus als Geschichte und als Lehre* Driesch himself included McDougall's *Mind and Body* (1911) as evidence of a psychology that supported neo-vitalism.[100] Lodge, on his part, had attacked the materialistic monism of Haeckel and postulated vitalistic views of his own, based on his ether metaphysics rather than on sound biology. Considering these striking affinities it becomes clear that psychical research, in its search for psychic enchantments, had strong leanings towards vitalism from the start.

* * *

Two further considerations concerning the importance of psychic enchantment remain to be made, both having to do with the relative success of this particular school in terms of impact and staying power. The eventual success of psychic enchantment would only come after the discourse of psychical research had gone through another phase of major reorientation. The first and most fundamental factor in this regard is the increasing emphasis placed on *experimentation* and quantitative methodologies in parapsychology from the late 1920s onwards.[101] At the forefront in this experimental turn was the American botanist turned psychical researcher, Joseph Banks Rhine, who, from 1929, established a programme for experimental parapsychology under the supervision of

[99] McDougall, *Mind and Body*, 349-350

[100] Driesch, *Vitalismus*, 207.

[101] For a detailed discussion of this trend, see chapter eight below.

McDougall at Duke University, North Carolina.[102] The new American experimentalist programme signalled a move away from the largely anecdotal form of reporting that had dominated the earliest forms of psychical research, but also from the "qualitative" investigations of individual high-profile mediums and psychics that had remained popular among continental researchers in particular.[103] It also signalled an increased focus on strengthening the actual factual and evidential basis of the discipline through meticulous technical work in laboratories, at the expense of the more lofty and speculative philosophical vein that characterised people like Driesch. But perhaps most important of all, the experimentalist programme succeeded in establishing itself in an academic context, launching a scientific journal, supervising PhDs, and starting the route to full professionalisation. In short, a new kind of scientific legitimacy was secured for the experimentalist programme in psychical research, now re-branded as professional, academic "parapsychology".

The second important factor is *popularisation*. Psychical research had always had a broad outreach, with strong publishing ventures and lecture schemes spreading psychic enchantments to the masses. However, with the new experimentalist programme, this outreach seemed to move from "occult publishing" to the more "legitimate" genre of popular science. Rhine was himself an important entrepreneur in this respect, for not only did he make sure to write popularising books about the mysterious world of parapsychology as soon as the first positive experimental studies were in,[104] but he also made use of the new and powerful medium of radio – even broadcasting tests of "extra-sensory perception" live on the air every week for a whole year.[105] By the outbreak of World War II, parapsychology had attained a completely new status, based on a professionalised, experimental research programme with a growing popular outreach, which largely continued to play on the philosophical and worldview

[102] See Asprem, 'A Nice Arrangement of Heterodoxies' for the process leading up to this. It will also be discussed in more detail in chapters eight and nine.

[103] Schrenck-Notzing is again a clear example, but we should also mention the various researches of the French Institut Métapsychique International (founded 1919), and the many regional groups of the SPR.

[104] The first one being Rhine, *New Frontiers of the Mind* (1937).

[105] For discussions of these popularising strategies in modern parapsychology, see especially Paul D. Allison, 'Experimental Parapsychology as a Rejected Science', 283-288; Mauskoph & McVaugh, *The Elusive Science*, 160-163, 256; cf. Asprem, 'Parapsychology', 651, 655.

related questions that had previously dominated psychical research.[106] This combination set the stage for a veritable psychic re-enchantment of the educated classes of the post-war West.[107]

(III) Theologies of Emergence

Vitalism was not the only alternative to mechanistic materialism in the life and mind sciences in the early 20th century, but was part of a much broader anti-mechanistic and anti-reductionist current of thought surrounding the natural sciences. In chapter five we saw that, in terms of actual scientific recognition, positions related to organicism and holism were much more significant. Organicist positions stressed that higher-order entities, such as organisms or minds, could not be fully accounted for by an analysis of their constituent parts and the relations between them: the whole, in short, was more than the sum of its parts. This tricky position was generally opposed to reductionism and mechanism while it typically had less problems with materialism and monism. Organicists thus tried to dodge the bullet of dualism, a position that vitalists and proponents of psychic enchantments were almost always implicitly or explicitly afflicted with.

Doing this consistently was, however, a tricky feat to achieve, and it is perhaps not so surprising that organicists were often regarded as covert vitalists by their more mechanistic colleagues.[108] The most influential philosophical current attempting to put organicism on a conceptually solid ground was "emergentism". This is a school of philosophy of science that is still very much alive today, especially within the philosophy of biology and the philosophy of mind.[109] Contemporary emergentists typically recognise a heritage to an interwar discourse developed by Samuel Alexander, Conwy Lloyd Morgan, and Charlie Dunbar Broad in particular, which commonly goes

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[106] For a discussion of the value questions in Rhine era parapsychology, see especially David Hess, *Science in the New Age*, 76-85.

[107] For the full argument of this claim, see Asprem, 'Psychic Enchantments of the Educated Classes'.

[108] See, for example, the discussions in Allen, 'Mechanism, Vitalism and Organicism', 267-269; Gilbert & Sarkar, 'Embracing Complexity', 3-5.

[109] See, for example, the recent volume by Mark A. Bedau & Paul Humphreys, eds., *Emergence: Contemporary Readings in Philosophy of Science* (2008).

under the heading of "British emergentism". However, while this heritage is recognised, the attempts of contemporary philosophers to harmonise their own views with those of the British emergentists in a transhistorical dialogue obscures the fact that this line of thought originally grew out of an explicit concern with natural theology. In fact, the first major work on emergence, Alexander's *Space, Time, and Deity*, was given as Gifford lectures in natural theology in Glasgow in 1917, published in two volumes in 1920. The *Stanford Encyclopedia of Philosophy*'s entry on 'Emergent Properties' is even ready to describe Alexander's philosophy as being 'very close in detail to a standard form of non-reductive physicalism', comparing some of his passages with the views of Jerry Fodor, glossing over the fact that Alexander's notion of emergence was embedded in a heavily metaphysical and theological system that stands very far away from contemporary analytical philosophy of science.[110] The connection to natural theology goes beyond Alexander, however: the influential term 'emergent evolution' was introduced by another series of Gifford lectures given by psychologist Conway Lloyd Morgan at St. Andrews in 1921. These lectures were published as *Emergent Evolution* in 1923, and were largely a commentary on Alexander's previous lectures. Thus, when the philosopher C. D. Broad published his *Mind and Its Place in Nature* in 1925 – the only one of the three foundational works of emergentism *not* to have been developed as Gifford lectures[111] – he could draw on (and sanitise) points that had already been made in the context of natural theology. In the present section we shall have a look at the philosophical content of British emergentism, but above all assess its theological aspect. As with the previous schools, I will also discuss the impact and spread of these natural theologies of emergence.

* * *

British emergentism was constructed over the course of only a few years, from 1917 to 1925, by Alexander, Lloyd Morgan, and Broad. Although the problems these authors addressed were largely connected to the question of life, none of them were biologists

[110] O'Connor & Yu Wong, 'Emergent Properties', unpaginated.

[111] Instead, it was based on his Tarner Lectures in the philosophy of the sciences, established at Trinity College, Cambridge, in 1916. Interestingly, the first man to give these lectures was Alfred North Whitehead, who would give Gifford Lectures a decade later, contributing to the broader field of emergence theology by developing his "process philosophy ".

by profession. This points to a crucial feature of the controversies for defining and explaining life in the early decades of the 20th century: it was a highly interdisciplinary contest, with different disciplinary interests squaring off for authority over the field. The question of reductionism and mechanism in the study of life was, furthermore, loaded with connotations of which scientific discipline is the more "fundamental". According to the "disenchanted" perspective, life is capable of being reduced ultimately to chemistry, which is furthermore reducible to physics – everything can, theoretically, be explained from that level upwards given sufficient computational power. If this view could be challenged, one would have come a great deal further in claiming true autonomy and independence for the field of biology and the phenomenon of life more broadly. Emergence theory seemed to offer precisely this, and much more besides

All of the three authors mentioned above defined emergence in defence of a middle position between what we might see as two extremes on the "enchantment-disenchantment" axis – that is, between a vitalistic dualism on the one hand, and a monistic mechanism on the other. Alexander, for example, stated that

> Life is not an epiphenomenon of matter but an emergent from it. … [furthermore] there seems to be no need for postulating … a new substance, a directing principle, or, as Prof. Hans Driesch calls it, an 'entelechy' or 'psychoid'.[112]

The fine points of this statement become clearer if we turn to Lloyd Morgan's commentaries. Lloyd Morgan stresses an epistemological distinction between "emergents" and "resultants".[113] The distinction is essential to emergentist thinking: while emergents represent something entirely novel in nature, supervening on new kinds of relations between existing entities, resultants are the merely *additive* features of a system which can be calculated and predicted by adding up the parts that make up the whole. The distinction is crucial for differentiating emergentism from both mechanistic and vitalistic positions:

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[112] Alexander, *Space, Time, and Deity*, vol. 2, 64.

[113] One should take note that this distinction has a longer history, running at least back to John Stuart Mill. Mill made a distinction between "heteropathic" and "homeopathic" effects, which George Henry Lewes later renamed with the nouns "emergent" and "resultant", in rough correspondence with Mill's original distinction.

> The essential feature of a mechanical … interpretation is that it is in terms of resultant effects only, calculable by algebraic summation. It ignores the something more that must be accepted as emergent. It regards chemical compound as only a more complex mechanical mixture, without any new kind of relatedness of its constituents. It regards life as a regrouping of physico-chemical events with no new kind of relatedness expressed in an integration which seems, on the evidence, to mark a new departure in the passage of natural events.[114]

Morgan follows up by simultaneously allying emergence to naturalism and the modesty of 'proper science', while eschewing popular vitalistic notions as 'questionable metaphysics':

> The gist of [emergent evolution] is that such an interpretation [i.e. the mechanistic one] is quite inadequate. Resultants there are; but there is emergence also. … That it cannot be mechanically interpreted in terms of resultants only, is just that for which it is our aim to contend with reiterated emphasis. But that it can only be explained by invoking some chemical force, some vital élan, some entelechy, in some sense extra-natural, appears to us to be questionable metaphysics.[115]

C. D. Broad reiterated these distinctions in somewhat new terms a few years later. In his own terms, Broad distinguished between "substantial" and "emergent" vitalism, referring to the two clusters of positions which we have, I think less confusingly, preferred to name "vitalism" and "organicism":

> I think that those who have accepted [Substantial Vitalism] have done so largely under a misapprehension. They have thought that there was no alternative between Biological Mechanism … and Substantial Vitalism. They found the former unsatisfactory, and so they felt obliged to accept the latter. … [H]owever … there is another alternative type of theory, which I will call "Emergent Vitalism", borrowing the adjective from Professors Alexander and Lloyd Morgan.[116]

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[114] Morgan, *Emergent Evolution*, 8.

[115] Ibid.

[116] Broad, *The Mind and Its Place in Nature*, 58.

Broad, being an eminent representative of 20th century British analytic philosophy, is also the one who presents the most concise technical definition of his own emergentist position, defined both elegantly and rigorously in contradistinction to mechanism. I will end this more general introduction to emergence theory by quoting it:

> Put in abstract terms the emergent theory asserts that [1] there are certain wholes, composed (say) of constituents A, B, and C in a relation R to each other; [2] that all wholes composed of constituents of the same kind as A, B, and C in relations of the same kind as R have certain characteristic properties; [3] that A, B, and C are capable of occurring in other kinds of complex where the relation is not of the same kind as R; and [4] that the characteristic properties of the whole R(A, B, C) cannot, even in theory, be deduced from the most complete knowledge of the properties of A, B, and C in isolation or in other wholes which are not of the form R(A, B, C). The mechanistic theory rejects the last clause of this assertion.[117]

Mechanism and emergence are thus separated primarily by a point of epistemology: is it possible, even in principle, to predict higher-level properties from lower-level facts? Reductionistic and mechanistic philosophy answers this question in the positive, while emergence theory holds such prediction to be impossible, even given the most complete knowledge and the strongest possible computational power. This means that emergence is in conflict with the epistemological dimension of disenchantment.

* * *

In addition to shedding light on the epistemology of the special sciences, broader implications concerning worldview were very much present in these debates of emergence as well. In fact, all of the above authors discuss emergence in the context of broader concerns about worldview. For two of them – Alexander and Morgan – religion was a major concern. Alexander's development of emergence as a technical term in his Gifford lectures in Glasgow between 1916 and 1918 is often mentioned as initiating the new wave of British emergentist philosophies in the 1920s. It is, however, more precise to say that the concept was created in a dialog between Alexander and Morgan; Alexander himself states that the basic idea of emergence is taken from Morgan's

[117] Ibid., 61.

Instinct and Experience, from 1912.[118] A few years later, Morgan would spend the entire first lecture of his own Gifford's in 1922 giving an interpretation of Alexander's version of emergent properties.[119]

Alexander was certainly in need of interpretation. His two volume work was a highly speculative treatise of metaphysics, which tried to account for reality *in toto*, including extensive discussions of theology that were absolutely central to his whole project. This theological ambition has obviously been a source of confusion for contemporary philosophers who want to include this forefather in their canon of emergentist philosophy of science. Thus, for example, a dictionary entry on 'Emergent Properties' writes that 'Alexander's views are embedded within a comprehensive metaphysics, some crucial aspects of which are, to these readers, obscure'.[120] Similarly, the author of a recent survey article of British emergentism, Brian McLaughlin, admitted some hesitation when discussing Alexander, because 'to be frank, I find apparently conflicting passages in his texts and I am uncertain how to resolve the apparent conflicts'.[121] The author decided that he would spare the reader from these conflicts and instead 'note a reading of Alexander's texts that I find plausible'.[122] The conflicts and contradictions are very real, as we shall see, but deliberately ignoring them, and not least their main source, also means to ignore the decisively most central concept in Alexander's work: 'Deity', or 'the quality of deity'. In fact, McLaughlin does not mention this concept even once in his survey of British emergentism, and neither is it found anywhere else in the anthology on emergentist philosophy that the article is part of.[123]

What Alexander calls 'the quality of deity' is, however, inseparable from the concept of emergence as it is used within his at times supremely confusing metaphysical system.[124] As with the other emergentist systems, Alexander uses emergence to present

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[118] Alexander, *Space, Time, and Deity*, 14. The relevant reference is the last chapter of Morgan's book ('Finalism and Mechanism: Body and Mind'), which discusses at length the conflict between mechanism and vitalism.

[119] The crucial first series of these lectures were published as *Emergent Evolution* in 1923. The second follow-up series was published as *Life, Mind, and Spirit* in 1926.

[120] O'Connor & Yu Wong, 'Emergent Properties', unpaginated.

[121] McLaughlin, 'The Rise and Fall of British Emergentism', 31.

[122] Ibid.

[123] Bedau & Humphreys, eds., *Emergence*.

[124] See especially Alexander, *Space, Time, and Deity*, vol. 2, 341-372.

the image of a "layered reality" where "higher" levels of being emerge from more fundamental "lower" ones. In Alexander's scheme, the layers range from the most fundamental level of "Space-Time" itself, up through the material phenomena of physics and chemistry, to the organic phenomena of life and the mental phenomena of mind, all the way up to the 'quality of deity'. To picture these levels, and the relation between them, we may borrow a diagram from Lloyd Morgan's exposition of Alexander's system, which neatly pictures the main concepts (figure 8).

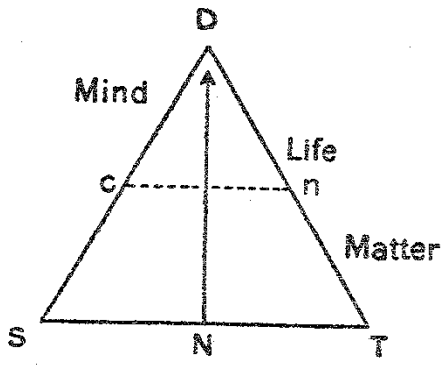


Figure 8: Morgan's figure depicting some points in Alexander's system. The line S to T represents the most fundamental reality of "Space-Time". The successively higher levels of matter, life, and mind, arise along the mid axis of emergence, pushed forward by a creative *nisus* (N), or force, immanent to the universe. At the apex of the triangle is the culmination of the process of emergence, the quality of "deity" (D). Reproduced from C. L. Morgan, *Emergent Evolution*, 11.

The triangle pictures how the higher orders of matter, life, and mind emerge from the base line (S, T) of Space-Time. The triangular form is meant to suggest that Space-Time encompasses the whole of reality in its *extension*, but not in its *qualities*: along the upward axis of emergence we get a gradual narrowing down of new phenomena, which are all nevertheless found within Space-Time, as full and complete separate and finite parts of it. The central axis along which these novel qualities are represented to emerge is what Alexander called the *nisus* of the universe (N), pushing reality onwards towards novelty. More specifically, the aim of this nisus is the 'quality of deity', shown here at the apex of the triangle (D).

The nisus of the universe is intimately connected with time in Alexander's system, but here in a special understanding of the concept that lies closer to Bergson's conception of *duration* than to the Einsteinian notion of a fixed space-time continuum.

This is only one example out of many confusing double-uses of the same term, which makes Alexander's work particularly obscure. The concept of nisus is the key to unlocking the links between Alexander's emergentism and his theology. While emergence as such simply suggests that genuinely novel "qualities" arise from increasing complexity in the internal relations of entities, the addition of a driving nisus weds this emergence of novelty more firmly to a notion of *progress* of a teleological, directive type.

This becomes clear when we try to unravel what is meant by the 'quality of deity', which nisus is said to point towards. Alexander discusses deity at length, in the process making a number of apparently contradictory claims about it. Deity is intimately connected with his attempts to define God, on the one hand, and with a discussion of the relation between different levels of emerged existents, on the other. We read, for example, that 'deity is not so much the quality which belongs to God as God is the being which possesses deity'.[125] But at the same time, deity is as we have seen just one step on the ladder of emergence and hence simply a local, finite event within space and time. Trying to grapple with these ideas we read further that 'Deity is … the next higher empirical quality to mind, which the universe is engaged in bringing to birth.'[126] At this point we see the contours of a bizarre theology in which God, or rather a being or beings with the quality of deity, will be created by the universe at some point in the future, as a kind of God at the End of History. This deity would emerge from the quality of mind, itself an emergent of life, which earlier had emerged from matter, and so on, down to the fundamental level of Space-Time. This emergent god would exist within the universe itself, and occupy only a very limited place in it. To use Alexander's own terminology, it would be a finite god.

This rather intriguing possibility, however, is immediately contradicted when Alexander suddenly writes something quite different about deity:

> For *any level of existence*, deity is the next higher empirical quality. It is therefore a *variable* quality, and as the world grows in time, deity changes with it. On each level a new quality looms ahead, awfully, which plays to it the part of deity.[127]

[125] Alexander, *Space, Time, and Deity*, vol. 2, 343.

[126] Ibid.

[127] Ibid., 348. My emphasis.

Now deity is defined as whatever comes next on a certain level of emergence. The elements of the periodic table would once have been the anticipated "deity" of the primordial plasma after the Big Bang, and the first living cells the deity of non-living chemical compounds. Whatever will emerge at a later point in time that has a greater order of existence than can be fathomed by our consciousness, then, is merely a manifestation of deity *relative to our own limited existence*. In other words, 'the relation of deity to mind is not peculiar to us but arises *at each level* between the next higher quality and the distinctive quality of that level'.[128] Whatever the deity of our human consciousness may be, it is sure to come, according to Alexander, as the universe is constantly generating deity through 'that restless movement of Time, which is … the nisus towards a higher birth.'[129]

Struggling with these apparently opposing and contradictory definitions of deity, Alexander reflects on the distinction between a "finite" and an "infinite God". The finite god is a hypothetical being (or beings) who will emerge with the quality of deity, out of the quality of mind, thus being to mind what minds are to bodies. This process is also described as a limited portion of Space-Time achieving the quality of deity, which furthermore includes in itself the "lower" portions of Space-Time, "all the way down".[130] However, a continued succession of such finite gods could in principle be produced throughout the history of the universe. If this was all, the theology of emergence comes across as a strangely *polytheistic* one. As Alexander writes,

> if the quality of deity were actually attained in the empirical development of the world in Time, we should have not one infinite being possessing deity but many (at least potentially many) finite ones. Beyond these finite gods or angels there would be in turn a new empirical quality looming into view, which for them would be deity – that is, would be for them what deity is for us. Just as when mind emerges it is the distinctive quality of many finite individuals with minds, so when deity actually emerges it would be the distinctive quality of many finite individuals.[131]

[128] Ibid., 349.

[129] Ibid, 348.

[130] Ibid., 354-356.

[131] Ibid., 361.

In contradistinction to these myriad finite gods that the universe continuously produces through its nisus towards higher births, Alexander asserts that there is also an "actual infinite God". This God, furthermore, is inseparable from the broader emergentist framework, and particularly the concept of nisus: 'As actual, God does not possess the quality of deity but *is the universe as tending to that quality*. … Only in this sense of straining towards deity can there be an infinite actual God.'[132] It is this latter conception of God, as **'**the whole universe, with a nisus to deity' which, according to Alexander, is 'the God of the religious consciousness' – even though the religious mind often 'forecasts the divinity of its object as actually realised in an individual form'.[133]

Having thus struggled to define two possible "types" of deity, where one is finite and the other infinite, Alexander goes on to treat separately the question of whether each of these types truly *exist*, at the present moment. His answer to these questions show in concrete detail what Alexander envisioned the two types of deity to be like, and what their true relation was.

> [D]o finite beings exist with deity or are there finite gods? The answer is we do not know. If Time has by now actually brought them forth, they do exist; if not, their existence belongs to the future. If they do exist ("millions of spirits walk the earth") they are not recognisable in any form of material existence known to us; and material existence they must have; though conceivably there may be such material bodies, containing also life and mind as the basis of deity, in regions of the universe beyond our ken.[134]

The existence of finite gods, which would quite literally be discrete entities within space and time, is left an open empirical question; however, if they do *not* exist, they will surely do so in the future, because of the universe's particular nisus. Concerning the existence of *infinite* deity, the complexity rises:

> Does infinite deity exist? The answer is that the world in its infinity tends towards infinite deity, or is pregnant with it, but that infinite deity does not exist; and we may now add that if it did, God – the actual world possessing infinite deity – would cease to be infinite God and

[132] Ibid. My emphasis.

[133] Ibid., 362.

[134] Ibid., 365

> break up into a multiplicity of finite gods, which would be merely a higher race of creatures than ourselves with a God beyond.[135]

This is the essential paradox at the core of Alexander's thinking: actual infinite deity can only remain infinite by not being limited by existence. Emergence may thus be seen as the solution to a theological paradox: the non-existence of infinite deity is that it is always in the future, it is always becoming. It is in this sense that the universe is *pregnant* with infinite deity:

> Infinite deity then embodies the conception of the infinite world in its straining after deity. But the attainment of deity makes deity finite. … God as an actual existent is always becoming deity but never attains it. He is the ideal God in embryo.[136]

* * *

In showing the theological framework from which emergence, so to say, emerged, I have focused on the relatively obscure work of Alexander. The justification for this is that his work was seminal, instigating the whole school of emergence theory in philosophy of science and beyond, even though that school has since taken other directions. However, Alexander was certainly not alone in embedding emergence firmly in a theological framework. One could, for example, very well have cited Morgan as well. In fact, while he claimed a thoroughly naturalistic attitude for his speculations, Morgan also explicitly stated that he wanted to challenge the notion that naturalism somehow precluded theology, or precluded that which was usually seen as "supernatural". In the introduction to his lectures, Morgan asked whether 'naturalistic interpretation suffices, or whether some further supra-naturalistic explanation is admissible … not as *superseding* but as *supplementing* the outcome of scientific enquiry'.[137] His answer, from the outset, was positive: 'I shall claim that it is admissible, and that there is nothing in emergent evolution, which purports to be strictly naturalistic, that precludes an acknowledgement of God'.[138] A major goal for the whole field, then, was to argue that

[135] Ibid.

[136] Ibid.

[137] Morgan, *Emergent Evolution*, 2. Emphasis added.

[138] Ibid.

emergentism, while elucidating much within the special sciences, also provides room for divine activity within nature, thus reconciling theology and naturalism.

Through the 1920s, emergentism became a rather fashionable intellectual current, which mobilised under its banner a number of organicist, holist, "gestalt", and neo-naturalistic positions in philosophy, biology, psychology, and theology. When William McDougall published the book *Modern Materialism and Emergent Evolution* in 1929, Morgan and Alexander were already seen as the key theorists, with some of the nomenclature of Broad added (notably the distinction between "Substantive" and "Emergent Vitalism"). A number of other authors were identified as belonging to this stream of thought as well, including the whole field of gestalt psychology and gestalt theory in the German life sciences, together with a number of earlier authors working on questions related to the philosophy of mind.[139] As a "school", then, there was much internal divergence, and far from all emergentists were explicitly theological. To quote McDougall,

> Many thinkers of very different schools are converging towards the one centre; some of them seemingly ignorant of those who are marching along other of the convergent lines. The leaders of the *Gestalt* school have shown no interest in Emergent Evolution and are apparently largely concerned to save the principle of Psycho-physical Parallelism. Professors Alexander and Lloyd Morgan are concerned chiefly to save God and the coherence of the evolutionary scheme. Professor Whitehead is concerned to save the unity of the natural world and seems indifferent and even a little hostile to the *Gestalt* workers, and not directly interested in biological evolution or the psycho-physical problem.[140]

Notably, McDougall found 'the most thoroughgoing and consistent and the least objectionable of all' systems of emergence in a "non-Alexandrian" work – namely in the American philosopher Roy Wood Sellars' influential book *Evolutionary Naturalism* (1922).[141] Sellars developed this work independently of Alexander and Morgan, but found very similar answers to the same basic problems.[142] Sellars' project of crafting a

[139] On the gestalt theories, see especially Mitchell G. Ash, *Gestalt Psychology in German Culture*; cf. Anne Harrington, *Reenchanted Science*.

[140] McDougall, *Modern Materialism*, 111-112.

[141] McDougall, *Modern Materialism*, 262

[142] See especially Sellars, *Evolutionary Naturalism*, 320-343.

"new naturalism" to replace the Victorian variety is interesting in many respects; for example, remaining largely nondenominational and irreligious, it may be considered a landmark work in the development of secular humanism in that it advocated a full naturalisation of ethics. Sellars resisted the tendency of reductionism, while holding that questions concerning human value and ethics are basically empirical questions belonging to higher levels of emergence.[143] Contrary to the axiological scepticism of the "disenchanted" view, Sellars' emergentist naturalism holds that ethics is perfectly possible without any "intellectual sacrifice". Ethics, furthermore, does not belong in metaphysics, but is a field of empirical enquiry. Value is not intrinsic, and "the good" is always a relational property: 'Ethical metaphysics results from a wrong ordering of categories, a neglect of their setting and context.'[144]

Returning to the more overtly theological uses of emergentist thinking, we should note that Alfred North Whitehead's so-called process philosophy also belongs to this wider stream of thought. Whitehead's *Process and Reality* is yet another example of a series of Gifford lectures in natural theology turning into a book that has since become highly influential on generations of philosophers and theologians. Whitehead's main ambition was nothing short of a reform of the whole of philosophy, including the interpretation of natural science. It was an explicitly holistic type of philosophy, which Whitehead termed from the outset 'the Philosophy of Organism'.[145] Similar to Alexander and Morgan, Whitehead's philosophy came with a theology as well, which has since grown into a school of its own under the banner of "process theology".[146] Formulated with a heavy influence from Whitehead's mathematical expertise, process philosophy has a terminology and manner of conceptualisation all its own. It remains, however, a philosophy and theology of emergence, in that it emphasises the emergence of novelty, of creation as an evolutionary process (e.g. 'the actual world is a process, and … the process is the becoming of actual entities').[147] Furthermore, it culminates in a view of

[143] Sellars, *Evolutionary Naturalism*, 341-343.

[144] Ibid., 343.

[145] Whitehead, *Process and Reality*, v.

[146] The primary custodian of process theology over the last four decades has been David Ray Griffin, whom we met in chapter two as a contemporary "re-enchantment theorist" and a proponent of the notion that modern science has been a destructively disenchanting force in the world.

[147] Whitehead, *Process and Reality*, 30. This passage is cited from Whitehead's overview, definition and systematisation of sets of categories. Thus, 'actual entity' in the above quote is a technical term which is

God that is, essentially, panentheistic:[148] that is, God is the world, as in a state of constant creation, but is also much more than the world in its finite aspect. 'God's immanence in the world in respect to his primordial nature is an urge towards the future based upon an appetite in the present'.[149] There are obvious similarities between Whitehead's appetitive god and Alexander's god in embryo. While Alexander, Whitehead, and Morgan may differ on certain theological and philosophical specifics,[150] they all seem to share a tendency towards panentheism, which rises particularly from taking considerations of evolution, emergence, and organicism as the basis for metaphysical speculation.

In concluding this section, I should like to note two points of historical consequence. First, "emergent evolution" and the attendant theologies of emergence may be characterised as a 20th century resurgence of an older form of natural theology, although indubitably with new form as well as content. Evolutionary and organicist views of the cosmos were central to romanticism, and we find ideas that are similar to Alexander's expressed in German *Naturphilosophie*, particularly in Friedrich W. J.

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defined, in the most general sense, as 'the final real things of which the world is made up'. Ibid., 24. The notion of the world as a process creating final entities is very similar to the view of Alexander, where the role of "process" is played by "nisus".

[148] For a systematic overview of panentheism, as used here, in contradistinction to other theological positions (including theism, deism, pantheism, and pandeism), see John Culp, 'Panentheism'. See also my discussion of this theological opposition at the end of the present chapter.

[149] Whitehead, *Process and Reality*, 43.

[150] One such theological difference is that Whitehead's process theology seems more readily orthodox than Alexander's, particularly when it comes to the relation between the divine and the world. For Whitehead, the world in its processual totality is brought forth by God's constant appetite for that which has already been conceptually "prehended" by the godhead. Thus, God is there from eternity, while the world is temporal and constantly being created. Alexander's work, on the other hand, permits a much more heterodox reading: here there is a greater dependence of God on the world, even to the extent of the world itself being the womb which carries the ideal god in embryo. It is not so much God that holds the world in himself from the beginning before realising it through constant creation, as the world, with its nisus towards deity, which *creates* God. For Whitehead's theology vis-à-vis common monotheistic positions, see e.g. Whitehead, *Process and Reality*, 484-497. See also one of the earliest commentaries on Whitehead, written by his admiring student, Dorothy M. Emmet, *Whitehead's Philosophy of Organism*, 242-273.

Schelling.[151] We also find this organicist and evolutionary emphasis in English and American literary romanticism, as has been attested by Frederick William Conner.[152] Despite the relative historical proximity, however, we do not find any clear evidence of direct influence from the German romantics on the early 20th century emergentists. Schelling, for example, is not cited by any of the main developers of this school. Instead, their likeness should be attributed to dealing with similar conceptual problems, and, at least partially, from making use of shared sources. Thus, for example, it is not a coincidence that emergentism is developed towards the end of the "eclipse of Darwinism", at a time where purposive and teleological models of evolution, including neo-Lamarckian theories, were being discussed. From the standpoint of the history of science, this phase in the history of evolution has certain commonalities with the pre-Darwinian phase in which the German romantics were writing.[153] Another factor is that, despite the common theological stress being laid on the distinction between the creator and the created, notions of nature itself being *active* and *creative* do have a longer history in Western thought. One notable predecessor is found in the notion of *natura naturans* as distinguished from *natura naturata*, going back to medieval scholasticism, but becoming central to Spinoza's system. As Frederick C. Beiser has noted, the project of Schelling's absolute idealism was, curiously, to reconcile Plato and Spinoza; furthermore, Spinoza was a substantial influence on Alexander. The question of whether Spinoza permits a panentheist reading along emergentist lines remains open, despite the common assertion that Spinoza's theology was simply "pantheistic".

The second historical point to make concerns the later influence of the emergence theology of the 1920s. As Wouter Hanegraaff has showed, the field of post-war religious thinking known as "New Age" has been suffused with evolutionary ideas regarding positive transformation of self, society, and the world, often amounting to complete philosophies of nature.[154] Hanegraaff notes that 'New Age evolutionism is

[151] On Schelling's *Naturphilosophie* and German idealism in general, see the momentous work by Frederick C. Beiser, *German Idealism*. For organicism in Schelling's *Naturphilosophie*, see especially ibid., 515-518.

[152] Conner, *Cosmic Optimism*.

[153] For the pre-Darwinian history of evolution, including the role of the romantics, see Bowler, *Evolution*, 46-102.

[154] Hanegraaff, *New Age Religion*, 158-168.

strongly influenced by' the trend of 'emergent evolution', but this influence is not given any further treatment besides being mentioned in passing in a footnote.[155] Instead, Hanegraaff provides a rich overview of the development of religiously oriented evolutionist thought from German romanticism, through 19th century occultism, to post-war New Age culture.[156] It may be argued that the natural theologies of emergence considered here constitute a central missing link in this larger story – one which could easily justify a study of its own.

(IV) Modern Alchemy

An alchemical discourse was revived in response to the discovery of radioactivity during the first decades of the 20th century. In the age of radioactivity, the transmutation of elements through radioactive decay and artificially produced nuclear fission, the notion of a "modern alchemy" was used to distinguish the new emerging views of matter from the chemistry of the 19th century. As such it was largely an exercise in identity construction through strategic uses of the history of science: the Daltonian paradigm in chemistry was portrayed as philosophically dull and superficial, in contrast to the "new alchemy" of the modern day, which presented a philosophy of nature in which matter was a much more interesting substance than previously thought.

I have argued that this reconsideration of alchemy, albeit somewhat superficial when used by working scientists, did project a course for modern physical chemistry that was at odds with the disenchanted view. Matter was neither completely inert, nor stable, nor even strictly predictable. Nevertheless, a new and enhanced form of *control* of nature emerged from this new conception as well. While they frequently emphasising the surprising new cosmology arising from the newer alchemy, scientists such as Ernest Rutherford or Frederick Soddy were in the end primarily interested in the new technical possibilities that came with the taming of transmutation. Thus, while Soddy can easily be described as a model "modern alchemist" in this sense, his vision for an alchemical science would hardly satisfy those who thirsted for a radical "re-enchantment" of the world. Soddy's worldview was, in the end, one of secular humanism, emphasising the technical control of nature for the advancement of

[155] Ibid., 466 n. 247.

[156] Ibid., 462-482.

humanity's self-determined, secular goals. Adopting his lingo to suit different audiences, Soddy was for example very clear about the absence of any deeper spiritual implications of modern science when he spoke to the Aberdeen University Christian Union in 1919:

> I have been struck with one curious point in the interest aroused by the recent advances in physics in the minds of the general public. I believe it is largely due to the underlying, if unexpressed, belief that, in thus laying bare the deeper secrets of external nature, we are approaching the nearer to the solution of the problems of life and the soul. One's scientific sense of direction tells that the further one advances towards the ultimate insoluble problems of physics, the more completely one leaves behind the phenomenon of life and all its mysteries. The advance in this direction has been from life and not towards it, and the clouded horizons towards which we move, whatever they may contain of wonder and revelation, are likely to afford little of moment to the real mystery of life.[157]

Despite his earlier enthusiasm and almost animistic language when describing the world of radioactivity, when addressing an audience with explicit religious agendas Soddy preferred to defend a view almost inseparable from the disenchanted one. Indeed, in a phrase sounding almost exactly like Weber on disenchantment, Soddy claimed that 'mystery in any real sense has been banished from the inanimate universe,' and continued to assert that '[s]cience has banished the conception of deity for ever from the working of the inanimate world, which behaves in all respects as, and therefore *is* a simple machine left to go'.[158] The real wonders of the new alchemy were to be found in technical applications and increased control over nature, and the betterment of human life predicted to emerge from new technologies.

However, the alchemical trope did also encourage a reconsideration of worldviews, allowing for scientific advances to be discussed not only in light of religious dogma, but also with reference to the heritage of Western *esoteric* thought. While the school of new natural theology that clustered around an appeal to modern alchemy and the new scientific ideas about matter and energy has been a whole lot less influential than the other schools we consider here, it does merit a brief discussion as one of the options that were being explored during this period. To focus my discussion, I will

[157] Soddy, *Science and Life*, 160.

[158] Ibid., 161, 173.

return to that curious, short-lived arena for exploring the contemporary scientific and spiritual relevance of alchemy: the Alchemical Society.

The Alchemical Society was not the only social arena for discussing alchemy, and its journal was not the only outlet for such discussions in writing. It is, however, the most relevant one for our present concerns, because it was so tightly knit with mainstream science. By contrast, for example, the active alchemical milieu in France was more clearly oriented towards the broader occult milieus associated with Martinism, Saint-Yves d'Alveydre, and Papus, and also possessed a strong tendency towards practical laboratory work aimed at more traditional understandings of alchemical transmutation. The names of Fulcanelli and Eugène Léon Canseliet (1899–1982) are particularly well known, but of perhaps more importance would be the work of François Jollivet-Castelot (1874–1937), who founded the Société Alchimique de France in 1896, and published its journal, *Les nouveaux horizons* (1906–1914). Jollivet-Castelot and his network is an under-researched chapter in the history of alchemy and esotericism. He worked systematically with laboratory alchemy, and developed an essentially animistic or "hylozoic" conception of matter as part of a broader alchemical philosophy of nature, which he termed "l'Hyperchymie".[159] This philosophy had a broader cultural influence, as Castelot temporarily became the teacher of the Swedish writer August Strindberg (1849–1912), who visited him in Paris in 1895. After the Alchemical Society had been established in London, its founder, Herbert Stanley Redgrove, and its honorary president, the esteemed Scottish chemist and historian John Ferguson, were both made honorary fellows of the Société Alchimique. The favour was returned, and Castelot was made an honorary member of the English society. A report on some of Castelot's work on transmutation (which he claimed had been successful) was subsequently published by the *Journal of the Alchemical Society*.[160] A German journal devoted to alchemical topics was founded a bit later, with the *Alchemistische Blätter* (1924) published in Munich by Otto Wilhelm Barth. This journal, however, was firmly embedded in the context of Rosicrucianism, Freemasonry, and secret societies,

[159] For a brief overview of Castelot's work and his network, see Richard Caron, 'Notes sur l'histoire de l'alchemie en France', 23-26.

[160] Willie Wendt de Kerlor, 'Some notes on the alchemical researches of M. Jollivet Castelot'. Cf. Cis van Heertum, 'Exploring alchemy in the early 20th century, Part I'.

and is even less interesting from the scientific perspective than the French.[161] The unique thing about the Alchemical Society, then, is that it was embedded in mainstream scientific structures, both through membership, organisation, and links to other scientific journals and societies.

Looking at the intellectual production of the Society – in the form of lectures given at its meetings and published in the *Journal of the Alchemical Society* – we find three papers that deal more explicitly with alchemy as a worldview allowing for some reconciliation of spirit and nature. The visions proposed, however, differ quite radically in their approach and main lines of reasoning. This mirrors the diversity of the group at large: the Alchemical Society housed not only spokespersons of different professions and social groups, including tenured chemists, engineers, historians, and occultists, but also different views on the nature of alchemy. In terms of using alchemy to understand modern science, and provide a bridge to new philosophies and theologies of nature on that footing, the most relevant contribution was that of Sijil Theodore Arthur Abdul-Ali (1889–1917), published in the third issue of the first volume of the journal, in 1913. Abdul-Ali was the son of an Indian-born book publisher and his English wife, and worked in London as a clerk with the Registry and Copying Division of the Board of Trade.[162] Besides studying alchemy and modern science, he displayed an obvious interest in esoteric topics, publishing several articles on "Jewish mysticism" in *The Occult Review*.[163] He was a very active member of the Alchemical Society and served as the Society's secretary. In October 1917, shortly after the Society stopped its meetings due to the war, Abdul-Ali was killed by an enemy airstrike while hospitalised in France, where he had been stationed with the Royal Engineers.

Abdul-Ali's paper purported to give an 'interpretation of alchemy in relation to modern scientific thought', as the title suggested. Abdul-Ali was largely concerned with finding ways in which alchemical concepts could meaningfully be translated to modern

[161] For a brief overview of the journal's content, and Barth's publishing ventures, see van Heertum, 'Exploring alchemy in the early 20th century, Part II'; cf. Julian Strube, *Vril*, 95, 110-111, 117, 175, 178.

[162] Information recorded by Department for Business Innovation & Skills, War Memorial, WW1 Project, entry on 'S.T.A. Abdul Ali'.

[163] E.g. Abdul-Ali, 'The Metaphysical Outlook in Jewish Mysticism'; idem, 'The Doctrine of Transcendence and Emanations in Jewish Mysticism'; idem, 'The Unwritten Law in Jewish Mysticism'. The latter two of these were published after his death.

scientific notions, through a sort of conceptual reinterpretation of alchemical discourse. From the start, the paper was grounded in a historical and philosophical discourse that had already been created in the previous two meetings of the Society, concerning the philosophical foundations of alchemy as a science. During the first meeting in 1913, Redgrove had contrasted the epistemological foundations of alchemy and modern science through a distinction between deductive and inductive methodologies.[164] According to Redgrove, alchemy had been a deductive science, in that it had started from dogmatically assumed first principles, of a theological, cosmological, and metaphysical character, and deduced knowledge of the natural world from these principles. Modern science was by contrast inductive, in the sense of working in a strictly empirical manner.[165] Abdul-Ali concurred with this evaluation, and proceeded to take up a similar deductive approach himself by establishing correlations between alchemical principles and current scientific concepts.[166] His stated project was to bring the 'Hermetic' perspective of alchemy to bear on present philosophy of nature:

> All of this, of course, is of very general application. It is primarily a philosophy of the Universe. But if the Hermetic axiom be sound, what is true of the Universe is also true of every single department thereof. Hence we have here also a philosophy of nature in the narrower sense; and it is when thus considered that it comes into contact with the natural sciences.[167]

Abdul-Ali focused on four interconnected doctrines: 1) the doctrine of a special "first matter" of "hyle", as the fundamental stuff of the material world; 2) the doctrine of the four elements, contained implicitly in the first matter and subsequently, by a process of differentiation, making up the manifest material world.; 3) the notion of a divine spirit

[164] See Redgrove, 'The Origin of Alchemy'.

[165] Note, however, that most historians and philosophers of science today would contest the description of modern science as "inductive". While an appeal to inductivism had been an important part of the scientific revolution, notably emphasised in Baconian empiricism and in the methodology developed in appendices to Newton's writings, around the late 18th century, the natural sciences developed a methodology more properly characterised as hypothetic-deductive. We have, for example, noted the enormous importance of a deductive methodology in 19th and 20th century physics.

[166] Abdul-Ali, , 'An interpretation of alchemy in relation to modern scientific thought', 34-36.

[167] Ibid., 38.

or essence, an *anima mundi* that pervades the world; 4) the idea of a *fifth essence*, which is neither the *anima mundi* nor a compound of the four elements, 'but a mediate Spirit by which an intimate and co-operative union between these is maintained'.[168]

Abdul-Ali's procedure from here is predictable. He discusses each postulate in turn and attempts to link them up with contemporary scientific concepts. Thus, for example, the concept of *proto hyle* is compared to modern chemistry, particularly the Daltonian atomic theory and Mendeleev's periodic table. After giving a relatively clear account of those theories, showing that they had been at the basis of the progress made in chemistry and physical chemistry, Abdul-Ali notes that there is a "genetic" aspect to the theory of the elements, suggesting that the elements have somehow "evolved". This notion would easily have been found in contemporary sources: for example, Soddy's post-radioactivity conception of matter attacked older forms of "chemical creationism", and a similar point had been made by Gustave Le Bon in *The Evolution of Matter* (1907).[169] On this evolutionary background, Abdul-Ali asks: 'What are [the elements] evolved from? What is the primary "stuff" out of which they are wrought?'[170] This brings him to consider the electron theory and the recent (this is 1913) advances in radioactivity research. Abdul-Ali refers to the positive alpha- and negative beta radiations, and correctly observes that these suggest the atom to be made up of positively and negatively charged particles, the latter of which being the electron. On this basis, he suggests that the "protyle", or ultimate substance, is of a dual nature: 'It thus seems reasonable to postulate *two* primordial substances, or protyles, one positively and the other negatively electrified, out of which atoms have evolved'.[171] Speculating further on the nature of the electron, Abdul-Ali reveals a good overview of the many theories that were available at the time. Interestingly, however, he still chooses to emphasise on the somewhat older *etheric* theories, that saw electrons as vortices in the ether. On these lines, Abdul-Ali suggests that both the positive and negative part of the protyle might be ether vortices:

[168] Ibid.

[169] See Soddy, *The Interpretation of Radium*, 221-229.

[170] Abdul-Ali, , 'An interpretation of alchemy in relation to modern scientific thought', 41.

[171] Ibid., 42.

> Perhaps it would be better to suggest minute vortices or eddies in the ether, which are positive or negative according to the direction of the vortical motion constituting them. This is purely speculative; but that there is an essential and integral connection between the ether and the atom is beyond doubt.[172]

The strong conviction that ether must somehow be involved would seem surprising and anachronistic had it not been for the fact, referred to several times already, that ether physics survived in various forms much longer than is often assumed.[173] Thus Abdul-Ali's article testifies to the strange space of possibilities that was open during these years: the old theories of ether remained available, while the strange new world of radioactivity and new concepts of matter and energy were slowly entering the scene.

Exploring the full range of this space, Abdul-Ali identifies three important physical concepts: *energy*, described as the most fundamental concept; *ether*, which 'unites energy and matter';[174] and "*ultimate atoms*", or the (positive and negative) protyles mentioned above. The protyles Abdul-Ali describes come very close to the positive and negative "ultimate physical atoms" described by Annie Besant and Charles Webster Leadbeater as part of their "clairvoyant" exploration of the elements, which had been published in a monograph edition in 1909.[175] Although it is not expressed directly, it seems likely that Abdul-Ali's conception of positively and negatively charged "ultimate atoms" is derived from this Theosophical literature – adding further to the fusion of sources.

However this may be, Abdul-Ali holds that the three concepts of energy, ether, and ultimate atoms, display a significant resemblance to three of the alchemical concepts he introduced earlier: the "Soul of the World", the "Spirit of the World", and "the First Matter".[176] The Soul of the World is equated with the physical concept of *energy*, described as 'the immanent and creative essence in things':

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[172] Ibid., 43.

[173] Cf. Stanley Goldberg, 'In Defense of Ether'.

[174] Abdul-Ali, , 'An interpretation of alchemy in relation to modern scientific thought', 44.

[175] See Besant and Leadbeater, *Occult Chemistry*. For an analysis of this programme, and its relation to physical science, see chapter eleven below.

[176] Abdul-Ali, 'An interpretation of alchemy in relation to modern scientific thought', 44.

> "The Soul of the World" is the ubiquitous, immanent and creative essence in things. Evidently the phrase describes something very much like energy … . The principal difference is that to us the term "energy" denotes a concept which has a definite mathematical expression, although, of course, we do not know the nature of energy considered as "substance"; while to the alchemists such names as "The Soul of the World" had a quite general and undefined meaning. [177]

Continuing his translation efforts, Abdul-Ali proceeds to equate the *quinta essentia*, or Spirit of the World, with ether:

> Then "The Spirit of the World" or "Fifth Essence", considered as the medium by which the Soul held intercourse with its Body (*i.e.* ,matter) is analogous to the ether, the medium of energy transmission, as already explained.[178]

The four elements proved much harder to make sense of from a modern scientific perspective. Abdul-Ali insinuated that they may be given a modern meaning in terms of the *states* of matter, rather than in terms of "elements" in the modern sense.[179] Following this approach, he considered the liquid, solid, and gaseous states to correspond with water, earth, and air, while fire could be understood in terms of 'what may be called the incandescent-gaseous' state – probably referring to plasma. However this may be, the translation attempt now starts to look more than a little forced.

Finally, Abdul-Ali hinted to what one would otherwise have thought was the most obvious point of connection between alchemical and contemporary scientific discourse, namely the vindication of transmutation by radioactivity. Somewhat surprisingly, Abdul–Ali does not appear too enthusiastic about radioactivity's relevance for alchemy: 'I may remark … that modern methods in this branch of experimental research [i.e., transmutation] are entirely different from those of the alchemists, and do not, in my opinion support alchemical doctrines.'[180] On this he was undoubtedly correct from a historical perspective, but one is left wondering why the same objection is ignored in the rest of Abdul-Ali's paper. Indeed, it is quite unclear what is really

[177] Ibid.

[178] Ibid.

[179] Ibid., 44-45.

[180] Ibid., 45.

achieved by Abdul-Ali's attempt at building the foundations of a new philosophy of nature on a metaphorical relation to alchemy. Its grasp of contemporary science was not the main problem, but the struggle to give new meaning by forcing alchemical terms on scientific ones does, in the end, appear quite superficial and without any real consequence.

Despite this disappointment, Abdul-Ali's is the most complete and sincere discussion of alchemy with regards to modern science to appear in the limited corpus of the Alchemical Society. Other speakers at the Society's meetings also touched on the subject in various ways, but mostly in a more taken-for-granted and not very systematic fashion. Thus, for example, the occultist and author of Templar and Masonic myth, Gaston De Mengel, spoke about the historical evidence for authentic transmutation, by focusing on the example of the Dutch physician and alchemist Johann Friedrich Schweitzer (a.k.a. Helvetius; 1625 – 1709).[181] Although largely a report on the historical evidence, De Gaston freely made reference to recent scientific evidence to make transmutation seem more plausible:

> I need not remind you that the opinions of these scientists are greatly emphasized by the discoveries of the past ten years: the study of kathodic rays and of radio-activity has given an entirely new aspect to the scientific view of the nature of matter and the constitution of the so-called elements. You will find these views developed nowhere better than in Dr. Gustave Le Bon's *Evolution and Matter* … Assuming therefore that we have no valid ground for denying *a priori*, for scientific reasons, the possibility of transmutation, I will pass to the positive historical evidence.[182]

After this vaccination against *a priori* objections, De Mengel goes through the case of Helvetius' alleged transmutation, finding that it has been well authenticated and should be taken seriously. In fact, De Mengel's main point becomes that the only reason it has *not* been accepted as authentic has been scientific chemistry's inability to explain such occurrences.[183] De Mengel then sets out to provide an explanatory framework, or, in the occultist's own words, 'a line of thought along which may be discerned, more or less

[181] De Mengel, 'Evidence for Authentic Transmutation'.

[182] Ibid., 51.

[183] Ibid., 56.

dimly, some explanation of the *magnum opus*'.[184] This, curiously, brings De Mengel into "ether metaphysics", as he seeks to find such a line of thought in 'a hypothesis as to the genesis of matter from Aether, and the modifications of Aether, and consecutively of matter, by spiritual activity'.[185] A long and complex cosmological vision follows, intending to show how a "primordial" ether gets differentiated into the ether known to physics, and how this, again following Kelvin's vortex model, gave rise to matter. In the end De Mengel adds a rather vague statement on how certain psychological traits, and particularly 'awareness' – conceived of as a 'spiritual' faculty – can play a role in the process of 'differentiating' the ether.[186] How all this is thought to work, and what supports it, is all very obscure, but it is clear that the notion serves to build a connection between the mental and the physical, active through the ether, and which would make alchemy seem more plausible. In the discussion following his paper, Abdul-Ali showed particular interest, calling it a paper of 'ingenious originality'.[187] It is also to be noted that he picked up on De Mengel's use of the ether, giving certain suggestions to expand that line of theorising, mentioning Oliver Lodge's *The Ether of Space* (1909) as a valuable reference for further work.[188] Whatever the actual theology or philosophy of nature coming out of modern alchemy really was, it seemed unable (or unwilling) to get rid of the ether.

The final author who made a concentrated effort at saying something about alchemy and worldview in the context of the Alchemical Society was yet another occultist, namely Isabelle de Steiger (1836–1927).[189] De Steiger is an important, yet somewhat overlooked figure in the history of late Victorian occultism. She was a close friend of Mary Anne Atwood, whose *Suggestive Inquiry into the Hermetic Mystery* (1850) cemented a notion of alchemy as having been a purely spiritual pursuit. Furthermore, de Steiger was involved with most of the major esoteric societies and movements that mushroomed from the 1870s onwards, including the Theosophical Society, the Hermetic Society (she was close friends with its founder, Anna Kingsford), the Hermetic

[184] Ibid.

[185] Ibid.

[186] Ibid., 59-60.

[187] Ibid., 60 (discussion section).

[188] Ibid.

[189] De Steiger, 'The Hermetic Mystery'.

Order of the Golden Dawn, and, following the latter's schism at the turn of the century, of Arthur Edward Waite's Holy Order of the Golden Dawn. She was even an early member of Rudolf Steiner's Anthroposophical Society, after it split from Theosophy around 1909. De Steiger supported a version of Atwood's "spiritual alchemy" thesis. In her address, de Steiger emphasised her notion of "superhumanity"(which had previously been commented on briefly by Redgrove in the Review section of the *Journal*), in order to speak of the "internal" quest of the 'Hermetic mystery'. Because of her generally mental orientation, stemming from the peculiar theories on mind and magic developed in 19th century occultism largely under the historical influence of Mesmerism, de Steiger focuses less on contemporary scientific issues. She talks at some length about Mesmerism, and calls it 'the key to all magic, known to every race and time', finding in it the spiritual key to alchemy as well.[190] This is entirely in the line of Atwood's spiritual alchemy.[191] The closest one gets to an engagement with science is, once again, some references to the ether. While Abdul-Ali had correlated the ether with *spiritus*, however, de Steiger equated it with the alchemical *prima materia* – which Abdul-Ali had interpreted as the protoyle.[192] This fundamental semantic confusion illustrates the utter arbitrariness characterising the metaphorical play with scientific and alchemical concepts in the Alchemical Society.

De Steiger's understanding of the ether appears largely influenced by, and probably mediated through, Theosophy. Largely in agreement with Theosophical doctrine, she presents a classification of three different "degrees" of ether. Only the lowest or crudest of these is the one known to physics, the three higher ones being more subtle and "spiritual" forms of substance.[193] A similar idea was expressed in Besant and Leadbeater's project of occult chemistry, although differing somewhat in details such as the number of subtle "planes" beyond matter and ordinary ether. De Steiger is generally a little ambivalent towards Theosophy, dismissing the programme of occult chemistry as completely irrelevant for true alchemy: 'the "occult chemistry" of Mr. Leadbeater and Mrs. Besant has, I think, no resemblance at all to the Arch-Chemistry of the

[190] Ibid., 22-23.

[191] See especially Atwood, *Suggestive Inquiry*, 181-201

[192] Ibid., 18-19.

[193] Ibid., 19-20.

alchemists'.[194] That 'Arch-Chemistry', in her opinion, was a spiritual alchemy, and would therefore look nothing like the Theosophical attempt to clairvoyantly perceive the elements, or for that matter the "modern alchemy" of contemporary radioactivity research.

* * *

The motivation for forming the Alchemical Society was not only to re-evaluate historical alchemy, but also to investigate its relevance for contemporary science, as a more profound philosophy of nature with prospects of bringing the domains of religion and science together. It is difficult to avoid the conclusion that the Society ultimately failed in this aspiration. Several reasons may be given for this, the most prosaic one being its very short lifespan and unfortunate discontinuation after the outbreak of war. However, its real failure is that no consistent alchemy-based philosophy of nature ever emerged, that there was no hint of any consensus in the group, or even any clarity about what lines such a philosophy should be developed along in the first place. The three examples given above illustrate this lack of agreement. Despite a low level of conflict in the meetings and a tendency to applaud all contributions, these three authors disagreed on almost every single point: the place and nature of "transmutation", the physical or spiritual character of alchemy, and the exact correlations with modern science, to take but the three most central ones.

In a recent book on the alchemical revival of the early 20th century, Mark Morrisson has presented a somewhat more charitable interpretation of the Alchemical Society than the one given here.[195] Morrisson argues that the Alchemical Society displayed a hybrid character stemming from its curious position in between various occult and academic milieus. Morrisson furthermore holds that this situation in fact gave the Society a strategic *advantage*: it provided an arena where very different viewpoints could meet and interact, giving the possibility of sharing ideas that could not have been shared otherwise.[196] I would like to problematise this evaluation: When we look at the philosophical and natural theological outcome, its lack of consistency is no doubt due to *too much* openness and an absence of paradigmatic restrictions. Thus,

[194] Ibid., 31.

[195] Morrisson, *Modern Alchemy*.

[196] Ibid., 55-59.

there is no real *dialogue* on these issues in the Alchemical Society, merely a conglomeration of different and opposing monologues, each following their own agenda without taking serious notice of each other. The outcome in terms of an alchemical philosophy of science was thus very minimal and superficial. It may remain true that the society had a strategic potential for dialogue, and for making it possible to put the particular agenda on the table. We must however conclude that the agenda appears not to have been realised.

If no satisfactory natural theology arose from the socially hybridic meetings of the Alchemical Society, we should, however, grant it more success in its aspirations to renew the *historical* study of alchemy. Although it is not my major concern here, the meeting of the influential "spiritual alchemy" thesis with the views stressing actual physical work in laboratories did lead to better understandings of the subject. It was, for example, in this context that Arthur Edward Waite first presented his mature view on alchemy, moving away from the purely spiritual interpretation so fashionable among occultists.[197] Here, the meeting between occultists, historians, amateur historians, and chemists was certainly a more fruitful one, as seen, for example, in the discussions between Waite and Redgrove.[198]

Despite its ultimate failure as a natural theology, the story of modern alchemy, particularly through the effort of the Alchemical Society, is of historical importance. It represents a unique attempt to theologize a certain part of physical science in a period characterised by scientific instability and change. The alchemy trope had been reintroduced by enthusiastic scientists who realised that a conceptual revolution was needed in chemistry if their observations were correct. The observations, as we saw in

[197] Waite, 'The Canon of Criticism in Respect of Alchemical Literature'. For Waite's place in the historiography of alchemy, see the evaluation in Principe and Newman, 'Some Problems with the Historiography of Alchemy', 393-395. Principe and Newman note Waite's change of perspective on alchemy in late life, but are not able to find a clear reason for this change: 'The occultist has marvelously transmuted himself into a positivist; whether his mind was changed by further studies or by a convenient abandonment of Victorian occultism for 1920s positivism is unclear'. The answer is neither: Waite's transformation was already in place in 1913, and it happened in the post-radioactivity milieu of modern alchemy in which Waite's ideas were challenged by scientifically more literate people such as Redgrove, in the shared environment of the Alchemical Society. For the relation between Waite's historiography and his esoteric and religious leanings, see Hanegraaff, *Esotericism and the Academy*, 247-252.

[198] Cf. Redgrove, 'The Origin of Alchemy'.

chapter four, were established already in 1902. It would, however, be more than two decades until a sufficient set of theories emerged to explain what was going on, and finally replace the earlier models of the 19th century. The Alchemical Society emerged in the middle of this theoretical vacuum. Another reason for what today looks as a confused mix of "backward" ether physics and "progressive" radioactivity research was simply that clarity on these matters was still lacking. However, when this gap was eventually filled at the end of the 1920s, with the establishment and popularisation of the relativity theories and quantum mechanics, the plausibility of modern alchemy gradually withered away. In 1945, the spiritual enthusiasm surrounding radioactivity was quite literally blown away in Hiroshima and Nagasaki. For natural theology, any paradigm will ultimately do, it seems, and a new school quickly emerged to take the place of the ether metaphysics and modern alchemies of the past: quantum mysticism.

(V) Quantum Mysticism

References to quantum mechanics and the "new physics" became a standard ingredient of the New Age and "alternative spiritual" visions of the post-War era.[199] A number of spiritual and theological claims have been argued with reference to basic concepts, experiments, and theories belonging to this field. A brief list of examples would include works such as Lawrence LeShan's, *The Medium, the Mystic, and the Physicist* (1966), Fritjof Capra's *Tao of Physics* (1975) and *The Turning Point* (1982), Gary Zukav's *The Dancing Wu Li Masters* (1979) and *The Seat of the Soul* (1989), Michael Talbot's *Mysticism and the New Physics* (1980), Deepak Chopra's *Quantum Healing* (1989), Amit Goswami's *The Self-Aware Universe* (1993), and a host of other books, articles, TV-shows, documentaries, and films. Although it is not within the scope of the present work to review this vast and still growing literature in its dimensions of breadth, width or depth, it is worth pointing out that a number of themes show up in this later literature that may be traced back to the interpretation and popularisation of new scientific concepts by working scientists of the pre-War period. We may, for example, broadly distinguish between two quantum mechanical focus areas that have been particularly popular, namely the stress on acausality, and the re-evaluation of the role of the observer in

[199] For a general exposition of "New Age science", see Hanegraaff, *New Age Religion*, 62-76.The best scholarly treatment of quantum mysticism as a specific theme (under the heading 'Quantum Metaphysics') is found in Hammer, *Claiming Knowledge*, 271-303.

experiments.[200] In various combinations, these have been used to argue positions such as absolute idealism (e.g. Goswami), that the ordinary physical world is illusion (e.g. Talbot), that consciousness creates reality (e.g. Zukav, Talbot, Chopra), or that there is a general convergence between modern physics and "mysticism" (e.g. LeShan, Capra). In addition come various forms of holistic and vitalistic perspectives, emphasising the ostensible capability of quantum mechanics to counter mechanism, determinism, and/or reductionism.[201]

In the present section I build on the discussion presented at the end of chapter four, and proceed to argue that all the themes mentioned above can be seen as part of a natural theological school of "quantum mysticism" that has its origin with the generation of scientists who developed and conceptualised quantum mechanics. It was born out of a number of intersecting agendas: a struggle to define a new and philosophically more profound identity separating the "new" physics from the "old" one was a central concern of the first wave of fanciful interpretations, largely born in continental Europe; secondly, a wave of popularisation took place in the late 1920s and 1930s, in which the most exotic aspects of physics were emphasised, and possible wider implications of a philosophical and religious character were fed to an enthusiastic public. Together these two aspects led to and sanctioned a field of speculation around the new physics, which imprinted on the general culture and laid the foundation for later speculative uses of physics along the same lines.

* * *

As we saw in chapter five, early quantum physicists were generally not reluctant to speculate on the radical philosophical implications of their science. This, I argued, could be seen as an explicit rejection of disenchantment, in the interest of distancing oneself from a cultural stigma attached to the natural sciences after the Great War. The strategy of the revolutionary physicists was, in short, to portray disenchanted science as something of the past – the naive and erroneous ways of 19th-century "classical"

[200] In addition to these come an interest in the concepts of the uncertainty principle, wave/particle duality, and complementarity – all three related in various ways to the two first.

[201] Here we could mention David Bohm, who may be described as a holist, anti-reductionist, and anti-mechanist, but at the same time seems to border on a radical determinism. A vitalistic dimension appears to be present in Gary Zukav's "Wu Li" project. Cf. Hammer, *Claiming Knowledge*, 292-295.

mechanists. I argued that these wider cultural and identity-political concerns motivated individual scientists to make certain choices concerning the interpretation of their data, choices that were not strictly speaking necessitated by them. Examples of this include the stress on fundamental acausality, as expressed paradigmatically by Heisenberg as part of his uncertainty principle of 1927, and Bohr's insistence on the principle of complementarity, barring the search for a unified description of quantum phenomena.

While these are already steps in the direction indicated, they are still far from constituting theologies or any positive statements about the structure of reality at all. After all, logical empiricism of the Vienna circle fashion was an important part of the identity of quantum mechanics. Thus complementarity, acausality, and indeterminism were *pessimistic* assertions about the poverty of experience in supporting grand mechanistic models of reality, and not a basis for constructing any new metaphysical system. While it is thus correct to say that the philosophical emphasis of this generation of physicists was on epistemology, there seems to have been a kind of slippery slope from the epistemological to the metaphysical. Thus, for example, while Bohr was careful to strategically distance himself from 'mysticism, antirational vitalism, and acausality construed in favor of spiritualism', at the right occasions and in front of the right audiences (the quotation is from his address to a Vienna circle meeting in Copenhagen in 1936),[202] he was flexible enough to also speculate on the implications of complementarity for human values and experience, or using it in the defence of free will, when addressing other kinds of audiences.[203] Thus, for example, in front of a crowd of anthropologists in the late 1930s, Bohr appealed to complementarity to suggest the plausibility of a cultural relativism that would undermine chauvinistic ethnocentrism and nationalism.[204]

In addition to debunking determinism and defending free will, we also find some of the more extravagant themes of the later quantum mysticism expressed among the earliest quantum physicists, including support of vitalism, organicism, and holism, even of the radically idealistic thesis that consciousness is somehow directly involved with, or responsible for, the production of the physical world. Both vitalism and subjective

[202] Heilbron, 'The Earliest Missionaries', 218-219.

[203] See e.g. the essays in Bohr, *Atomic Physics and Human Knowledge*. Cf. Forman, '*Kausalität*, *Anschaulichkeit*, and *Individualität*', 336.

[204] Bohr, 'Natural Philosophy and Human Cultures'.

idealism were in fact expressed by Pascual Jordan, one of the originators of quantum mechanics in the research group of Max Born and Werner Heisenberg in Göttingen. Jordan was cut off from much of his scientific network when he joined the NSDAP in the 1930s, while many of his colleagues emigrated. During this period, Jordan started to take his interpretations of quantum mechanics in new directions. In a paper published in 1935 he stated that the observer of a quantum mechanical experiment does not so much pick out pre-existing realities, as actually *create* those realities through the act of observation.[205] This amounted to what Max Jammer, in his standard work on the philosophy of quantum mechanics, called a 'maximum formulation' of the problem with indeterminacy.[206] The implication of this interpretation was, to begin with, that philosophical realism fails: there can be no knowledge of an independent physical world, only of a world that is constructed by the observer. Jordan's point remained an epistemological one, albeit a step more extreme than the main line of the Copenhagen school. The understanding that the implications of the new role of the observer were philosophically revolutionary, and moreover tending in a religious direction, were sufficiently widespread for the Vienna circle philosopher Philipp Frank to address it explicitly on the pages of *Erkenntnis*. [207] Unsurprisingly, his conclusion was that 'the new role of the "observer" in physics *cannot* be exploited in support of a turn of physics towards a more spiritualistic conception.'[208]

Another radical approach was Jordan's attempt to link quantum mechanics to vitalistic notions in biology. According to Jordan, the radical indeterminacy of quantum events made the "new physics" much more hospitable to non-mechanistic interpretations of life and organisms than the "old physics" had been. In stating the relation this way, it is notable that Jordan went a step further than Bohr in this regard as well; Bohr too had voiced his ideas on what quantum mechanics meant for the life sciences, but to him the question was restricted to his usual epistemological points concerning complementarity. The 'proper biological regularities' could be envisioned as laws of nature that were *complementary* to the laws governing inorganic matter, Bohr

[205] Jordan, 'Quantenphysicalische Bemerkungen zur Biologie und Psychologie', 228.

[206] Jammer, *The Philosophy of Quantum Mechanics*, 161.

[207] Frank, 'Zeigt sich in der modernen Physik ein Zug zu einer spiritualistischen Auffassung?'

[208] '[D]ie neue Rolle des "Beobachters" in der Physik lässt sich *nicht* zugunsten einer Wendung der Physik zu einer mehr spiritualistischen Auffassung ausnützen'. Ibid., 71.

claimed, and held to be able on this basis to resist both mechanistic reductionism and the invocation of special vitalistic forces.[209] Jordan likewise presented his view as in compliance with a purely epistemological position that did not end up in metaphysics, but he had a much less convincing case. This became clear when Jordan courageously presented his views in the journal of the Vienna circle, *Erkenntnis*. Jordan's article sparked a large philosophical debate in 1934 and 1935, involving some of the foremost contemporary philosophers of science, including Hans Reichenbach, Otto Neurath, and Moritz Schlick. [210] Rather unimpressed by the nexus linking quantum mechanics, philosophy of biology, and the question of free will, Neurath concluded: '[T]he method practiced by Jordan, to link good, new physics with outdated metaphysics, does not serve the clarification that we seek.' [211] Despite his failure to convince the logical empiricists, Jordan continued his line of speculation in the years that followed, even publishing a short monograph entitled *Die Physik und das Geheimnis des organischen Lebens* in 1941. Here, the thesis had been expanded to a chapter on 'Quanten-Biologie', followed by chapters on psychology, the problem of freedom, and even physics and religion.

While there was thus some tendencies within scientific debates not only towards disputing the strictly disenchanted world picture, but also towards suggesting new metaphysical possibilities, we have to look to the *popularisation* of physics to find these perspectives applied more explicitly to the field of natural theology. In what follows, I will review two particularly important examples, both taken from the British context. The astrophysicist and pioneer cosmologist Arthur Eddington (1882–1944) developed his views on the new physics and religion in the context of the Gifford Lectures in 1927, published as *The Nature of the Physical World* in 1928. James Jeans (1877–1946) articulated his views on the matter in his bestselling popular science book, *The Mysterious Universe*, published in 1930.

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[209] Bohr, 'Biology and Atomic Physics', 21.

[210] E.g. Jordan, 'Quantenphysicalische Bemerkungen zur Biologie und Psychologie'; Zilsel, 'P. Jordans Versuch, den Vitalismus quantemechanisch zu retten'; Frank, 'Zeigt sich der modernen Physik ein Zug zu einer spiritualistischen Auffassung?'; idem, 'Jordan und der radikale Positivismus'; Neurath, 'Jordan, Quantentheorie und Willensfreiheit'; Reichenbach, 'Metaphysik bei Jordan?'; Schlick, Einige Bemerkungen über P. Jordans Versuch einer quantentheoretischen Deutung der Lebenserscheinungen'.

[211] '… die von Jordan geübte Methode, gute, neue Physik mit veralteter Metaphysik zu verbinden, dient nicht jener Klärung, die wir anstreben'. Neurath, 'Jordan, Quantentheorie und Willensfreiheit', 181.

* * *

Eddington belonged to the first generation of British physicists who embraced relativity and quantum physics. He even played a role in the vindication of general relativity when, in 1919, he led an expedition to Sobral in Brazil, photographing the solar eclipse and providing evidence that the light of stars were bent around the sun, as Einstein had predicted.[212] This event pretty much launched Eddington's career as a public physicist. The following year, his *Space, Time and Gravitation* (1920) became the first popular exposition of general relativity in the English language. His *Stars and Atoms* (1927) was another popular success, and included expositions of his own scientific contributions in astrophysics, particularly concerning the composition of stars. The same year, Eddington gave his series of Gifford Lectures in Edinburgh, published as *The Nature of the Physical World*.

Although we discuss this book under the heading of "quantum mysticism", *The Nature of the Physical World* is about much more than quantum mechanics. Its scope is the whole of the physical sciences, presented in a broad cosmological framework. The first eleven chapters of the book expound on the recent developments in physics in general, especially relativity theory and quantum physics, but also the gradual development of thermodynamics. In a popularising manner, Eddington explained how these fields are thought to bear on cosmological questions such as the ultimate fate of the universe (ch. IV), and man's place in it (ch.VIII). He also made contributions to the "plurality of worlds" debate by speculating about possible life on Venus and Mars. For example, he though it entirely possible that Venus is covered by vast oceans hidden under its fog, and is a planet 'where fishes are supreme'.[213] As for Mars, Eddington found that there is 'a rather strong case for the existence of vegetation' on the planet, but held that the evidence was insufficient to conclude anything about animal life.[214] However, as he was inclined to reject the nebular hypothesis of formation of planetary systems – a scientific tradition stretching back to Swedenborg, through Laplace, by which the formation of planetary systems would be expected to have happened

[212] Kragh, *Quantum Generations*, 97.

[213] Eddington, *The Nature of the Physical World*, 171.

[214] Ibid., 174.

frequently in the universe – he held our solar system to be 'a freak' among the stars.[215] Our sun was the only known star with planets, he stressed, while there were 'thousands of double stars in the sky', stars that were thought unlikely to produce planets.[216]

Such cosmological speculations are obviously of a certain relevance to worldview questions, as they say something about the place of human beings in the universe at large. Historically, natural theology has often focused on precisely such questions, whether related to the age of the earth, its place in the solar system, its uniqueness in the universe, or the question of whether we are alone or not. Contemplating the place of humanity in the cosmos, Eddington remarks that life seems not to be a central ingredient in our universe, and humanity itself is certainly not in any essentially privileged position. Despite an initial pessimism, however, Eddington does seem to suggest that there is a "purpose" to the universe after all, and that this purpose is connected with what he conspicuously calls 'the mystery of consciousness':

> Assuming that the stage of highly developed life is a very small fraction of the inorganic history of the star, the rival earths are in general places where conscious life has already vanished or is yet to come. I do not think that the whole purpose of the Creation has been staked on the one planet where we live; and in the long run we cannot deem ourselves the only race that has been or will be gifted with the mystery of consciousness. But I feel inclined to claim that at the present time our race is supreme; and not one of the profusion of stars in their myriad clusters looks down on scenes comparable to those which are passing beneath the rays of the sun.[217]

Eddington is thus able to argue that humanity *is* (most likely) in a special position *for the time being*, in the capacity of having attained this mystery of consciousness. It is interesting to note that the basic assumption here is not so far removed from that of Alexander and the emergentists: the ability of the universe to produce conscious beings becomes the mystifying central point. Humanity's role is solely as a specific step in this process, at a more or less random place within spacetime.

These cosmological considerations already address issues connected with natural theology. In the last four chapters of the book, however, Eddington deals

[215] Ibid., 176.

[216] Ibid.

[217] Ibid., 178.

explicitly with the 'position which this scientific view should occupy in relation to the wider aspects of human experience, including religion'.[218] He made clear that the first eleven chapters could easily be enjoyed and appreciated on their own terms, seen apart from the applications in the latter part of the book; however, Eddington also stated that his 'principal aim has been to show that these scientific developments provide new material for the philosopher. I have, however, gone beyond this and indicated how I myself think the material might be used.'[219] It is these four last chapters that interest us the most, as they contribute significantly to the developing discourse on science and religion. As I will show, Eddington's approach to this discourse bears certain clear signs of his Quaker upbringing and beliefs. Furthermore, I concur with Peter Bowler's verdict that it amounts to a theology of nature, rather than a natural theology in the strictly defined sense.[220]

Eddington develops an essentially idealistic metaphysic to account for reality, which harkens back to 19th century theories. For example, Eddington borrows the concept of "mind-stuff" from the Victorian mathematician and philosopher William Kingdon Clifford (1845–1879):

> the stuff of the world is mind-stuff. … The mind-stuff of the world is, of course, something more general than our individual conscious minds; but we may think of its nature as not altogether foreign to the feelings in our consciousness.[221]

Admitting that this idealist foundation may be hard to swallow for many of his colleagues, Eddington appealed to an old sceptical argument:

> It is difficult for the matter-of-fact physicist to accept the view that the substratum of everything is of mental character. But no one can deny that mind is the first and most direct thing in our experience, and all else is remote inference – inference either intuitive or deliberate.[222]

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[218] Ibid., vii.

[219] Ibid., viii.

[220] Bowler, *Reconciling Science and Religion*, 110.

[221] Eddington, *The Nature of the Physical World*, 276. Clifford's definition of "mind-stuff" was published in the journal *Mind* in 1878: Clifford, 'On the Nature of Things-in-Themselves', 65-67.

[222] Eddington, *The Nature of the Physical World*, 281.

Similar to how epistemological scepticism has so often been used in support of idealism in the past, the point of the argument is that " mind" or "consciousness" is the only thing of which one has some more or less certain knowledge, and that hence it should be more parsimonious to assume other, less certain types of entities to be in some way of the same "stuff", rather than inferring something of a radically different nature.

While this fundamental epistemological scepticism may not seem too convincing as a support for idealism as it once did, it is still connected to a distinction that is absolutely central to Eddington's philosophy of nature. Eddington distinguishes between two types of knowledge, one "symbolic" and the other "intimate". Scientific knowledge is of the symbolic kind: it is a set of abstractions and reconstructions of a supposed world "out there". The symbols are capable of being processed, calculated, schematized, communicated and criticized. Intimate knowledge, on the other hand, is the kind of knowledge which is spontaneous, direct, and happens in immediate experience.[223] This type of knowledge is not really capable of being faithfully translated into symbolic knowledge; when translated, it is essentially lost, or transmuted into something essentially different.[224]

An example of symbolic versus intimate knowledge is provided at the very beginning of Eddington's chapter on 'Science and Mysticism'. Here he cites and compares two passages that are both meant to describe waves created on a surface of water by a soft breeze: one is from a textbook on hydrodynamics, and filled with equations; the other is taken from a sonnet by the poet Rupert Brooke (1887–1915). The joy, laughter, and emotion triggered by the view of waters blown by changing winds in Brooke's sonnet are, from the scientific perspective, mere illusion and self-deception,

[223] Eddington's category seems to correspond to the contemporary notion of "embodied" knowledge; that is, the focus on perception, cognition, and mental activity in the context of our bodily situatedness. Some classics in this burgeoning field on the intersection between phenomenology, philosophy, psychology, and neuroscience include Maurice Merleau-Ponty, *Phénoménologie de la perception*; Francisco Varela, Evan Thompson, and Eleanor Rosch, *The Embodied Mind*; Shaun Gallagher, *How the Body Shapes the Mind*; Lawrence Shapiro, *Embodied Cognition*. It should be noted that this contemporary stream of thought has also been used on several occasions to justify new views on "spirituality", this time particularly through an embrace of various forms of meditation, and through secularised Buddhism. See especially the final chapter of Varela, Thompson, and Rosch, *The Embodied Mind*.

[224] Ibid., 321-323.

Eddington explains.[225] Yet, most people would agree that there is something valuable and authentic about the experience of nature, conveyed here in poetry. This immediate experience of nature is, in fact, what moves Eddington to approach the concept of "mysticism". Intimate knowledge is involved in a 'mystical feeling for Nature', but also in the 'mystical experience of God'. However, since this intimate knowledge is lost to symbolic knowledge – including science and theology – these two types of knowledge seem on the surface to exclude one another. One is thus left with a choice:

> It seems to me that the only alternatives are either to count all such surrender to the mystical contact with Nature as mischievous and ethically wrong, or to admit that in these moods we catch something of the true relation of the world to ourselves – a relation not hinted at in a purely scientific analysis of its content. I think the most ardent materialist does not advocate, or at any rate does not practice, the first alternative; therefore I assume the second alternative, that there is some kind of truth at the base of the illusion.[226]

Having thus vouched for the validity of "mystical" intimate knowledge – vis-à-vis, and partially *opposing* scientific knowledge – Eddington goes on to characterise what the truth of mysticism might be:

> If I were to try to put into words the essential truth revealed in the mystic experience, it would be that our minds are not apart from the world; and the feelings that we have of gladness and melancholy and our yet deeper feelings are not of ourselves alone, but are glimpses of a reality transcending the narrow limits of our particular consciousness – that the harmony and beauty of the face of Nature is at root one with the gladness that transfigures the face of man.[227]

Mysticism, then, appears as a route to real and important knowledge, of a kind quite different from scientific knowledge. Substantially, the knowledge is one of monism, or at least of an integration of individual consciousness with the totality of the world.

There is, however, a fundamental pessimism here about the very project of natural theology, even of theology as such. As Eddington reminds his readers, 'theology

[225] Ibid., 317-320.

[226] Ibid., 320.

[227] Ibid., 321.

is symbolic knowledge whereas the experience [i.e. mystical experience of God or nature] is intimate knowledge' – the latter, he had already claimed, can never be translated faithfully into the other.[228] Hence, a "scientific" search for God in Nature is fundamentally misguided. This criticism is expanded when Eddington writes that

> … if the scientist were to repent and admit that it was necessary to include among the agents controlling the stars and the electrons an omnipresent spirit to whom we trace the sacred things of consciousness, would there not be even graver apprehension? We should suspect an intention to reduce God to a system of differential equations, like the other agents which at various times have been introduced to restore order in the physical scheme.[229]

A search for divine agency in nature might, in fact, lead not to a re-enchantment of science, but rather to a *trivialization* and *reduction* of the divine to a system of arbitrary and symbolic differential equations. In place of the strictly natural theological project, Eddington thus defends a "mystical religion", built on intimate experience:

> I repudiate the idea of providing the distinctive beliefs of religion either from the data of physical science or by the methods of physical science. Presupposing a mystical religion based not on science but (rightly or wrongly) on a self-known experience accepted as fundamental, we can proceed to discuss the various criticisms which science might bring against it or the possible conflict with scientific views of the nature of experience equally originating from self-known data.[230]

The real problem remains to build something lasting, a worldview or a religion, which must essentially imply a symbolic kind of knowledge. Doing so, Eddington argued, is necessary: 'If not, it can only be left ungraspable – an environment dimly felt in moments of exaltation but lost to us in the sordid routine of life'. The way of formalising a worldview in symbolic language had, however, to be deeply personal and individual: 'We have to build the spiritual world out of symbols taken from our own personality'.[231] Intriguingly, Eddington thus comes in support of a strengthening of the faculty of

[228] Ibid., 322

[229] Ibid., 281-282.

[230] Ibid., 333.

[231] Ibid., 337-338.

imagination, a faculty which, he reminds his readers, is always present for us when we interact with the world around us, a world which science has taught is largely "illusion":

> … so it seems to me that the first step in a broader revelation to man must be the awakening of image-building in connection with the higher faculties of his nature, so that these are no longer blind alleys but open out into a spiritual world – a world partly of illusion no doubt, but in which he lives no less than in the world, also of illusion, revealed by the senses.[232]

Eddington's pessimism about natural theology, and defence for an individualised mysticism which at best supplements science, and perhaps finds certain analogies to support its case in the difference between scientific and everyday conceptions of reality, seems to be in harmony with his Quaker background. Quakerism, it is to be remembered, is a pietistic Christian movement with a strong emphasis on internal "mystical" practices by which one is said to enjoy direct contact with God in one's soul – even though these practices are typically managed in collective gatherings. By emphasising the direct mystical experience over the symbolic and doctrinally mediated knowledge of sciences and theologies, Eddington's philosophy of nature is in compliance with the Quaker understanding of religion.

Although sceptical of natural theology's *sufficiency*, Eddington did not refrain completely from drawing certain metaphysical conclusions from contemporary physics. Indeed, he held that the 'idea of a universal Mind or Logos would be … a fairly plausible inference from the present state of scientific theory; at least it is in harmony with it'.[233] His scepticism was rather connected with questions of value. As we saw, the god of natural theology had to be a rather indifferent god:

> all that our inquiry justifies us in asserting is a purely colourless pantheism. Science cannot tell whether the world-spirit is good or evil, and its halting argument for the existence of a God might equally well be turned into an argument for the existence of a Devil.[234]

With this in mind, one might wonder how any more certainty could be gained through mysticism than through science. Eddington treats this question as one of the most

[232] Ibid., 324.

[233] Ibid., 338.

[234] Ibid.

serious objection that a scientist could raise against the mystic: does the mystic have any *method of inference* by which intuitive self-knowledge may give way to substantial and reasonably secure knowledge? Eddington admitted that there is a historical association between mysticism and 'extravagances which cannot be approved', as well as indications of unhealthy psychopathological conditions giving rise to what *seems* like exalted moments of insight.[235] Nevertheless, he decided to shrug off these difficulties with yet another analogy to the imprecision of our senses in general, and the possible dangers this represents for science: 'the avenue of consciousness into the spiritual world may be beset with pitfalls, but that does not necessarily imply that no advance is possible'.[236] Eddington furthermore made clear that his reference to mysticism must not be taken to imply merely exceptional, extravagant experiences and abnormal states of consciousness: 'to suppose that mystical religion is mainly concerned with these [extravagant experiences] is like supposing that Einstein's theory is mainly concerned with the perihelion of Mercury and a few other exceptional observations'.[237] Similarly, the crucial mystical experience was to apply generally to the interaction with the world, as the spontaneous feeling of being present in and fully integrated with nature. However this may be, Eddington's defence of certainty in mysticism, and its validity as a basis for worldviews in the end boiled down simply to these analogies and common sense arguments; a "method of inference" is never suggested.

In summing up and concluding, there are two crucial movements in Eddington's take on natural theology. The first is to provide an argument for idealism, and especially the role of consciousness in the universe, based on recent scientific advances. While this is undoubtedly a metaphysical position, Eddington does not consider it sufficient for a natural theology as such. Instead, and secondly, he defends a mystical religion which is, in fact, *opposed* to a natural theology, strictly defined as the attempt to find, by scientific means, traces of the sacred in nature. The only authentic way to religion is through an inner mysticism, undoubtedly primed by his Quaker background; ultimately 'the God within creates the God in Nature'.[238] Those searching for God in the equations of physics have gone looking in the wrong place.

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[235] Ibid., 340.

[236] Ibid.

[237] Ibid.

[238] Ibid., 330.

These two general arguments are expressed in four points summarised by Eddington in his final chapter on mystical religion.[239] First, the entities of physics are of a symbolic nature, which make it 'almost self-evident that it is a partial aspect of something wider'. This serves a very general epistemological basis for an idealist interpretation, which gives room for alternative ways of knowing pertaining to whatever is beyond physics. Secondly, following the quantum revolution, strict causality is abandoned, which 'relieves the former necessity of supposing that mind is subject to deterministic laws or alternatively that it can suspend deterministic law in the material world'. Third, the physical world is completely abstract and lacking "actuality" – 'apart from its linkage to consciousness' – an insight which restores consciousness 'to the fundamental position instead of representing it as an inessential complication occasionally found in the midst of inorganic nature at a late stage of evolutionary history'. Again, this primacy of the conscious subject is taken as a vindication of idealism, and furthermore makes it easier to accept mysticism in the form defined by Eddington. Fourth and finally, the correlation of a "real" physical world to certain conscious feelings is neither more nor less legitimate than 'correlating a spiritual domain to another side of our personality'. This last point is again a consequence of the epistemology of physics as Eddington conceives it.

Even though Eddington allowed himself to go in a much more metaphysical direction than his continental colleagues, who were more concerned with following the latest philosophical fashions of Vienna and Copenhagen, he too in the end drew more from the *epistemology* of physics than from its substance. It was by taking the new anti-realism of physics seriously, and embedding it in an idealist framework that mysticism became a viable option. What little could be drawn from the substantial side of physics seemed to Eddington to support idealism further, but without the intimate mystical experience of comfortable unity with the whole of nature, such inferences were useless as natural theologies. The inner illumination of mysticism was the only guarantee that the "world spirit" was divine and not demonic. With this assessment, however, the picture that appears from Eddington's writing is really that modern science might support religion *despite itself*. It is in this context that the oft quoted phrase that 'religion

[239] The points and the following citation are found in ibid., 331-332.

first became possible for a reasonable scientific man about the year 1927' should be read. I will close this discussion on Eddington by quoting it in full:

> It will perhaps be said that the conclusion to be drawn from these arguments from modern science, is that religion first became possible for a reasonable scientific man about the year 1927. If we must consider that tiresome person, the consistently reasonable man, we may point out that not merely religion but most of the ordinary aspects of life first became possible for him in that year. Certain common activities (e.g. falling in love) are, I fancy, still forbidden him. If our expectation should prove well founded that 1927 has seen the final overthrow of strict causality by Heisenberg, Bohr, Born and others, the year will certainly rank as one of the greatest epochs in the development of scientific philosophy. But seeing that before this enlightened era men managed to persuade themselves that they had to mould their own material future notwithstanding the yoke of strict causality, they might well use the same *modus vivendi* in religion.[240]

In accordance with his common sense perspective, Eddington here makes it clear that the problems of determinism and free will have always been strictly intellectual, and that hence it is only 'that tiresome person, the consistently reasonable man' who has experienced them. It is only for this class of person that 1927 will stand as a year of relief. For everyone else, life remains what it always was. Remembering our previous discussion of disenchantment, it is tempting to conclude that Eddington, writing *as* a physicist, *for* the common crowd, while remaining true to his Quaker background, presents a view of the problem of disenchantment that is in line with my own: while Weber, as an academic and intellectual, may have seen "the disenchantment of the world" as the only outcome of the sciences, almost as a necessary deduction from its principles, most people, including many scientists and academics, may not have been so 'consistently reasonable'. For those who were, the revolutions of physics made other options viable once more.

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The other big public name in British physics in the interwar period was James Jeans. Jeans shared many things with Eddington: he too was a deft populariser, and his main

[240] Ibid., 350.

field of expertise was cosmology. Indeed, as a populariser, Jeans was even more successful than Eddington, writing not only books and newspaper columns, but also frequently appearing in the new mass medium of radio.[241] Also like Eddington, Jeans' popular science focused on the "big questions", openly addressing the question of what modern science has to offer religion. While much unites the two men we shall see that the big questions were in the end answered quite differently.

The book that concerns us the most here is *The Mysterious Universe*. Originally published in 1930 the book immediately became an all-time bestseller, breaking all previous records for science books.[242] Judging from the press reviews upon the book's publication, it was precisely the wider speculations on the world picture emerging from the new sciences that captured the popular reader's attention. Jeans' literary strategy in presenting the implications of science may be summarised in two main movements. First, he described the cosmology that had by the start of the 1930s emerged from the breakthroughs in the physical sciences with relativity, quantum mechanics, and new observations and theories in astrophysics. This was, as we already saw with Eddington, a cosmology in which humanity seemed hopelessly alone, surrendered on all sides by vast reaches of emptiness only interrupted by the most extreme conditions of heat, coldness, and radiation – hardly very hospitable for life in any known form. Jeans emphasised this feeling of alienation, describing the extreme isolation of humanity, our miniscule importance in the grander scheme of the universe's history, and the utter arbitrariness of our existence in the cosmos. Similar to Eddington, Jeans argued that whatever the purpose of the universe might be, it did not seem very likely to be the production of life; indeed, if one had to pick one phenomenon among others, it could just as well have been magnetism or electricity that the universe was " intended" to produce – at least these played a much more central role in it than did life.

As Bowler writes, Jeans' vision of 'a lonely humanity in a vast and empty universe had an austere grandeur'. Ending there would, however, be deeply troubling to anyone hungry for meaning. Again, as with Eddington and so many others, it was the invocation of idealism that would save the day for life and humanity, by reserving a special place for consciousness.

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[241] For a basic discussion of Eddington's and Jeans' popularisation campaigns, see Bowler, *Science for All*, 98-103.

[242] Ibid., 101.

Jeans' idealism has certain similarities with Eddington's, but the two are far from identical. Neither are their views on consciousness the same. Jeans introduced consciousness in the final chapter of *The Mysterious Universe*, entitled 'Into the Deep Waters', where he discussed its relation to the essentially deterministic universe as understood by general relativity. In this connection, he also introduced the concept of "world lines", used to describe the essentially geometrical aspects of time and duration. A "world line" is, in short, the extension of an object in four-dimensional spacetime. Thus we could imagine our own lives as tubes stretched out and entwined with other objects, with our births in one end, death in another, and all events finding their positions in between. Trying to situate consciousness in the middle of this static view of time proved difficult, but Jeans tried to find a way by going beyond spacetime itself: 'We can most simply interpret consciousness as something residing entirely *outside* the picture [of the physical world], and making contact with it only along the world lines of our bodies'.[243] On this view, the passage of time is merely an illusion which arises from the "contact" between consciousness and the world along our world lines. It would, however, have been more correct to say that events do not really *happen* at all, but that we merely come across them – everything has, in a sense, already happened.[244] This is undoubtedly a Platonic conception, and Jeans appropriately quotes the *Timaeus* in support on his eternalist view of time.[245] What emerges, however, is a completely deterministic worldview, and the place of consciousness seems from the above consideration very different from what Eddington presented. While Eddington asserted the primacy of consciousness and experience and described the physical world picture as merely symbolic, Jeans gives to consciousness a completely passive role, fixed to determined physical structures in a way that comes very close to the dualistic parallelism of Descartes.

Nevertheless, Jeans is at pains to insist that the deterministic aspects of his worldview do not entail materialism and mechanism. Through a slightly different route than Eddington, Jeans insists that his worldview too is in essence idealistic, and furthermore, connected to the old notion of a great 'Mind of God' in which all things subsist. Following his Platonic style of reasoning, major stress is laid on the role of

[243] Jeans, *The Mysterious Universe*, 118. Emphasis added.

[244] Ibid., 118-120.

[245] Ibid., 119.

mathematics in the universe. That nature has turned out to be 'very conversant with the rules of pure mathematics', that is, mathematics as thought up by mathematicians 'out of their own inner consciousness and without drawing to any appreciable extent on their experience of the outer world', being creations of pure thought, of reason 'operating solely within her own sphere', is to Jeans a fact not to be passed over lightly.[246] It leads him to a variety of the old teleological argument for the existence of God, also known as the "design argument". By analogy, Jeans considers how a deaf engineer and a deaf musician would study the automatic actions of a pianola.[247] The engineer might perhaps try to interpret it as a machine, 'but would be baffled by the continuous reiteration of the intervals 1, 5, 8, 13 in the motions of its trackers'.[248] The musician, on the other hand, even without being able to hear anything,

> would immediately recognise this succession of numbers as intervals of the common chord, while other successions of less frequent occurrence would suggest other musical chords. In this way he would recognise a kinship between his own thoughts and the thoughts which had resulted in the making of the pianola; he would say that it had come into existence through the thought of a musician.[249]

The analogy is clear: the mathematically minded scientist has come to recognise mathematical structures everywhere in nature, and, although Jeans admits it is a crudely and inadequately developed belief, he may state that 'the universe appears to have been designed by a pure mathematician'.[250]

Jeans stated this conviction several times over, but we should continue now to have a look at how it is connected to an idealist metaphysic. In addition to Plato and Pythagoras, Jeans' philosophical favourite on this matter seems to be George Berkeley. After quoting Berkeley on the necessity he saw for an 'Eternal Spirit' in whose mind things subsist while they are not being perceived directly by individual minds, Jeans writes that '[m]odern science seems to me to lead, by a very different road, to a not

[246] Ibid., 130.

[247] I.e., a self-playing piano, which had been extremely popular in the 1920s.

[248] Ibid., 131.

[249] Ibid., 131-132.

[250] Ibid., 132.

altogether dissimilar conclusion.'[251] Behind this statement is Jeans' conviction that the old distinction between "realism" and "idealism" has become obsolete, and that what emerges from the modern scientific view of the world is a kind of "idealistic realism". Again, Jeans connects this position to the role of mathematics: "objective" realities exist in the sense of behaving invariably the same to all observers, and this objectivity is of a mathematical character.[252] Contrary to the materialistic mechanism of physics only a few decades earlier, Jeans contended that there was now almost unanimity that the scientific world picture is going in a non-mechanistic direction hospitable to this form of mathematical idealism:

> the universe begins to look more like a great thought than like a great machine. Mind no longer appears as an accidental intruder into the realm of matter; we are beginning to suspect that we ought rather to hail it as the creator and governor of the realm of matter – not of course our individual minds, but the minds in which the atoms out of which our individual minds have grown exist as thoughts.[253]

Jeans suggests a view of 'the universe as a world of pure thought', an idea which, he believes, throws some light on the historical development in physics as well.[254] If the universe is truly mental and mathematical, then this explains why one physical concept after the other had lost its picturability, being instead replaced by pure mathematical formulae. Furthermore, it means that the mathematical expression that describes a certain phenomenon is the most true and close to reality one can get: 'as long as there is no imperfection in this [the mathematical description] our knowledge of the phenomenon is complete'.[255] This realism about mathematics is obviously a big step away from Eddington's view – we are particularly reminded of his criticism of natural theology as resulting in arbitrary and empty equations.

Continuing his defence of mathematics, Jeans intriguingly slips into a metaphor of idolatry and iconoclasm, which I will quote at length:

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[251] Ibid., 137.

[252] Ibid., 137-138.

[253] Ibid., 148.

[254] Ibid., 140.

[255] Ibid., 141.

> The making of models and pictures to explain mathematical formulae and the phenomena they describe, is not a step towards, but a step away from, reality; it is like making graven images of a spirit. And it is as unreasonable to expect these various models to be consistent with one another as it would be to expect all the statues of Hermes, representing the god in all his varied activities – as messenger, herald, musician, thief, and so on – to look alike. Some say that Hermes is the wind; if so, all his attributes are wrapped up in his mathematical description, which is neither more nor less than the equation of motion of a compressible fluid. The mathematician will know how to pick out the different aspects of this equation which represent the conveying and announcing of messages, the creation of musical tones, the blowing away of our papers, and so forth. He will hardly need statues of Hermes to remind him of them, although, if he is to rely on statues, nothing less than a whole row, all different, will suffice.[256]

Jeans the iconoclast finished this analogy by noting slyly that most physicists were yet busily at work 'making graven images of the concepts of the wave-mechanics'.[257]

Jeans' scientific worldview, then, is an idealistic one, where the universe is brought forth by the thoughts of a master mathematician. Remembering Eddington's criticism of natural theology, one might wonder what the comfort of such a worldview is. Jeans was prepared to meet such criticism, and we might end this section by quoting from some of the final passages. Returning to the question of how consciousness is related to our individual world lines on a determined relativistic spacetime continuum, Jeans picks his metaphors well in an attempt to avoid the old connotations of mechanistic determinism. His determinism is rather expressed through analogies that invoke the enjoyment of finite pieces of art: 'we need find no mystery in the nature of the rolling contact of our consciousness with … space-time, for it reduces merely to a contact between mind and a creation of mind – like the reading of a book, or listening to music'.[258] Nature is more like a book or a symphony than a machine; this sounds perhaps more comforting, but just as the machine had already been built, the symphony had already been recorded, and "consciousness" was pretty much forced to listen. Jeans, however, continued to argue that the idealistic picture that in his opinion was suggested

[256] Ibid., 141.

[257] Ibid.

[258] Ibid., 143.

by modern physics should in the end sooth us, even despite of our apparent loneliness in the universe:

> It is probably unnecessary to add that, on this view of things, the apparent vastness and emptiness of the universe, and our own insignificant size therein, need cause us neither bewilderment nor concern. We are not terrified by the sizes of the structures which our own thoughts create, nor by those that others imagine and describe to us. … The immensity of the universe becomes a matter of satisfaction rather than awe; we are citizens of no mean city. Again, we need not puzzle over the finiteness of space; we feel no curiosity as to what lies beyond the four walls which bound our vision in a dream.[259]

Through the immense commercial success of *The Mysterious Universe*, the idea that physics was uncovering the workings of a mathematical architect God spread quickly among consumers of popular science. The first to criticise this view was the influential Marxist science journalist J. G. Crowther, one of the very first professional science correspondents in Britain, who argued (not entirely implausibly) that 'the mathematical character of the laws of nature was a human construction'.[260] This, as we have seen, is a conclusion that a certain other idealist physics populariser would probably agree to: Jeans' mathematical architect God is precisely the kind of colourless and arbitrary divinity that Eddington had warned about.

* * *

There seems to be a considerable drive towards idealism among the first generation of scientists working with the "new physics". This philosophical and natural-theological overlay, I argue, laid the foundations for a "quantum mysticism" to grow up from the middle of the 20th century. Authors such as Eddington and Jeans represent a link between the newer "spiritual" uses of science, and the older, predominantly British, discipline of natural theology. Eddington, on his part, formed his thoughts on the matter in the context of the explicitly natural theological Gifford Lectures, even though he ended up coming out against a traditional conception of natural theology. Jeans, on the other hand, presented a natural theology of the kind which Eddington opposed, and

[259] Ibid.

[260] See Bowler, *Science for All*, 101.

published it as a part of a wider project of science popularisation. Furthermore, for both these authors, and for continental scientists such as Jordan, Bohr, and later Pauli, the philosophical and sometimes directly religious implications of their discoveries were pitted against a caricatured picture of "classical" physics. As explained in chapter four, the distinctive features attributed to the new physics must be seen in light of the creation of emic historiographies of science. However, while Jeans was ready to contrast the idealistic worldview he drew from contemporary physics with the mechanistic one of the Victorian period, many Victorian ether physicists were, in fact, also idealists, and made some times quite strikingly similar arguments to the ones advanced by Jeans himself. Even Jeans' use of Berkeley found its precursor already in the ether metaphysics of Stoney and FitzGerald.

Despite the rather immense popular appeal of these quantum mystics and prophets of the new physics, Peter Bowler has passed a somewhat sobering judgment on Jeans and Eddington by focusing on the reception their works had among professional scientists and philosophers.[261] These were generally ambivalent, when not outright hostile:

> Not everyone agreed with the implications drawn from these theories, of course, and there were few physicists or philosophers in the later 1930s willing to endorse the idealism of Jeans and Eddington. Their philosophy was treated with suspicion even by some theologians, who thought that it provided no real evidence for a true spirituality. But the new science could at least uphold a challenge to simple materialism, and many religious apologists were eager to use the ammunition it gave them.[262]

In the end then, we must endorse as significant the conclusion that, through the early 1930s, 'the door to a reconciliation between the physical sciences and religion was held open by at least an articulate minority within the scientific community'.[263]

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[261] Notable examples of thorough philosophical criticism of the physicsits' turn to idealism includes L. Susan Stebbing, *Philosophy and the Physicists* (1937); Cf. A. D. Ritchie, *Reflections on the Philosophy of Sir Arthur Eddington* (1948).

[262] Bowler, *Reconciling Science and Religion*, 121.

[263] Ibid.

3 The Theological Underpinnings of the New Natural Theologies: Panentheism and Cosmotheism

Having now made our way through five schools of new natural theology, represented by a large sample of authors, philosophers, and scientists, advancing a number of diverging views among themselves, it is desirable to close this chapter with some general reflections that may draw this whole field of early 20th century intellectual culture together. In particular, it is justifiable to ask whether we can discern any commonalities between all these approaches to religion and science. I shall argue that we can. Furthermore, I will argue that these commonalities relate the schools we have discussed to a theological and philosophical current that has a long, but problematic, history in Western culture.

From a theological point of view, the foremost problem of natural theology concerns the relationship between nature and divinity. In Christian theology, and the Abrahamic monotheistic theologies more broadly, this relation has typically been described as one of separation, in which God is creator and nature his creation. This assumption has been the foundation for theistic and deistic theologies, which may crudely be construed as the two mainstream positions on the matter. The difference between the two is precisely the extent to which the divine interferes with his creation: regularly in the case of theism; not since the act of creation in the case of deism. A strict ontological distinction between creator and creation is, however, still assumed in both. As soon as this distinction is blurred, we are looking at positions that have typically been labelled "heretical" in Western theology. As Wouter Hanegraaff has recently shown, one of the fathers of the history of philosophy, Jacob Thomasius (1622–1684), formalised this distinction by holding that the "original fallacy" at the root of all heresies was the rejection of *creatio ex nihilo* in favour of a doctrine of the eternity of the world. To Thomasius, the idea that nature was eternal just like God had been at the core of paganism, and all later heresies inspired by, or tending towards, paganism. This doctrine could, however, take a variety of forms:

> All heretical beliefs were ultimately grounded in this belief: emanationism (souls or intelligences are not newly created by God but pour forth from his eternal essence), dualism (form and matter, or God and matter, are two co-eternal principles), pantheism (the world is

> God), and materialism (God is the world). In their different ways, all these variations amounted to deification of the creation at the expense of its Creator.[264]

Hanegraaff's thesis is that Thomasius' classification and pathology of error, set forth in his influential *Schediasma historicum* (1665), also and accidentally laid down the conceptual framework that led to the first historical conception of "esotericism", particularly through its influence on Ehregott Daniel Colberg's heresiological work, *Platonisch-Hermetisches Christenthum* (1690–1691).[265] These works defined the borders between acceptable and heretical doctrine, not only in theology, but in philosophy as well. The latter movement from theology to philosophy was particularly realised by the works of Christian August Heumann (1681–1764) and Johann Jacob Brucker (1696–1770); Heumann defined the characteristics of "pseudo-philosophy" with recourse to Thomasius, even explicitly holding a belief in the world's co-eternity with God to be one of the fundamental errors (together with the materiality of the soul, and the vitality or agency of matter), and Brucker implemented this general perspective in his widely read and extremely influential work in the history of philosophy, the *Historia critica philosophiae* (1742–1744).[266]

The new natural theologies we have encountered in this chapter are all at odds with orthodoxy as it was defined by these Reformation and Enlightenment authors. Although the question of the eternity of the world becomes a difficult one with the modern cosmology of an expanding and relativistic universe, as it appears in Jeans and Eddington, or even an organically evolving one, as in the theologies of emergence, the ontological distinction between creator and created does break down in all of them. They all position themselves in the theological landscape around the two pillars of Platonism and pantheism. Alexander, drawing equally on Spinoza and Plato, was perhaps the most heretical of them all, since his system not only stripped God's attributes of their eternity, but made divinity absolutely dependent on a constantly changing nature.

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[264] Hanegraaff, *Esotericism and the Academy*, 105.

[265] See especially Hanegraaff, *Esotericism and the Academy*, 101-114.

[266] For Hanegraaff's discussion of this development, see ibid., 127-147 (for Heumann's "pseudo-philosophy", see pp. 131-132).

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What, then, are the general positions open for natural theologies? Atheism and agnosticism are axiomatically ruled out by the very nature of the endeavour, and deism seems insufficient. Theism and pantheism are both viable options in principle, but in practice the theistic orthodoxy (in which an ontological difference between god and the world is presumed) seems to have moved increasingly out of fashion. Pantheism remains, but I will argue that what we see is rather varieties of *panentheism* or *cosmotheism*.

Panentheism and cosmotheism may be treated as different scholarly formulations of the same theological idea: one has been developed in the context of the philosophy of religion (panentheism), the other to point out a historically grounded theological development (cosmotheism). Panentheism may be described as a position that attempts to balance the transcendence of theism with the immanence of pantheism, while avoiding both the strict *separation* of god and nature characteristic of the former, and the *identification* of nature and god in the latter.[267] Literally, the Greek neologism would suggest that "all is in god", while some have preferred to add that god is thus also in all. The term was first coined in 1829 by the German philosopher Karl C. F. Krause (1781–1832); it is significant for us to note that Krause was developing a theological system in a romantic-idealist context that he shared with Schelling's *Naturphilosophie*.[268] In the 20th century, both the term and its conceptual content have experienced a revival, particularly due to Charles Hartshorne's work in the philosophy of religion.[269] After Hartshorne and William Rees re-introduced the term in 1953, and used it to identify and systematise a certain line of theological thinking in Western history, panentheism has had a veritable revival in late-20th century theology and philosophy of religion. Interestingly, it seems to have gathered particular attention among those theologians and philosophers who have engaged the question of

[267] For a short and systematic contemporary overview of the philosophical dimensions of panentheism, see John Culp, 'Panentheism'.

[268] See Niels Henrik Gregersen, 'Three Varieties of Panentheism', 27-28.

[269] See especially the introduction and epilogue to Hartshorne & Rees (eds.), *Philosophers Speak of God* (1953), which gathers together in a systematic way texts written by philosophers, prophets, and intellectuals, from Ikhnaten, Lao-Tse, Plato, and Aristotle, to Hume, Kant, and Schelling, to Freud, Nietzsche, James and Peirce. The introduction is entitled 'The Standpoint of Panentheism', and the epilogue 'The Logic of Panentheism'.

reconciling religion and modern science.[270] I suggest that this link has a longer history, and that the tendency away from theism and deism towards panentheism was suggested by early 20th century natural theology.

Another historical perspective on panentheistic theologies is found in Jan Assmann's historical work on monotheism. Although there is a striking resemblance between Hartshorne's version of panentheism and Assmann's main thesis on the development of monotheism in *Of God and Gods* there is no reference to Hartshorne's work in it, and panentheism does not even appear in the index. To Assmann, cosmotheism denotes a certain theological development in between paganism and monotheism, associated with the 'idea of the world as the embodiment of a soul-like god and of god as a soul animating the world'.[271] Assmann identifies cosmotheism, and the later development which he calls "hypercosmism", as the final stages in a process of "evolutionary monotheism".[272] Evolutionary monotheism is an inclusivist development from polytheism, leading to the "all gods are one"-theme of the Hellenistic period, and which continues to stress the co-dependence of god and the world. One of Assmann's main points is that *biblical* monotheism did *not* develop from this evolutionary monotheism, but rather came about by a radical theological break:

> It may now have become obvious … how far removed this kind of monotheism is from what the Bible tells us about the god of the Israelites. It may also have become clear that there is no evolutionary line that leads from polytheism to biblical monotheism. Concerning the main difference between biblical and evolutionary monotheism, the Bible does not say "All gods are One" but rather that God is One and "Thou shalt have no other gods. …" It does not establish a connection but rather draws a distinction between God and gods. Ultimately this distinction is one between God and world. Evolutionary monotheism does not draw this distinction. On the contrary, God *is* the world.[273]

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[270] For an overview of this current development, see e.g. Philip Clayton & Arthur Peacocke (eds.), *In Whom We Live and Move and Have Our Being* (2004). Philip Clayton was also co-editor (with Zachary Simpson) of the monumental *Oxford Handbook of Religion and Science*, which reads more as a work of theology and philosophy of religion than a work in religious studies. At least two articles in it deal explicitly with panentheism: Michael W. Brierley, 'The Potential of Panentheism for Dialogue between Science and Religion'; Owen C. Thomas, 'Problems in Panentheism'.

[271] Assmann, *Of God and Gods*, 71.

[272] Ibid., 53-75.

[273] Ibid., 74.

What emerges from Assmann's history of the idea of the one god is that two quite different monotheistic traditions existed in antiquity: one that had evolved out of paganism, and emphasised the connection between god and the world; and another that was founded on a radical break with this tradition, in which god and the world were separated, and the world furthermore subjugated to this god. The latter, which is the family of "biblical" monotheism in Assmann's nomenclature, gave rise to theism and deism. The "evolutionary" monotheisms, by contrast, gave rise to cosmotheism and hypercosmism, terms that cover the more familiar concepts related to panentheism and pantheism. On this branch Assmann places the late-antique theologies of the *Corpus Hermeticum*, as well as the philosophies of stoicism and neoplatonism. Considering the discussion of Reformation and Enlightenment heresiology above, it is hardly surprising to find that these currents have been particularly influential in Western esoteric thought. In the eyes of the heresiologist, they were tainted with philosophical "paganism", failing to radically separate the divine from the world and give the former the priority it was thought to deserve.

In the early 20th century, however, when the Christian rhetoric of heresy had lost much of its credibility, and, above all, lost effective channels of exercising power over intellectual culture, these panentheistic attitudes resurface within what can only be understood as an establishment discourse on nature and religion.[274] The five schools we have discerned all seem to be moving in the general direction of panentheistic theologies, although the degree to which they complete this movement varies. The clearest examples seem to be the schools of ether metaphysics, theologies of emergence, and the most developed forms of quantum mysticism. Ether metaphysics may be described primarily as a form of panentheistic idealism: the ether is a manifestation of the "mind of god", or alternatively seen as a garment of god, or god's body. Matter, energy, and forces of all kinds are made from, and play out in, this divine mental substance, and hence the whole world rests in the substance of god. Note, however, the difference from the *creatio ex nihilo* doctrine: creation was not a finite and distant

[274] By Christianity losing power over academic discourse, I am thinking about very specific developments, such as the secularisation of the universities, occurring together with the professionalisation and increasing institutionalisation of the natural sciences. These processes were not fully developed until the end of the 19th century. See e.g. F. M. Turner, 'The Victorian Conflict between Science and Religion'.

historical event, in which "something else" (the world) was created by god; rather, every single object in the world takes part in the substance of god through the ether.

The theologies of emergence are slightly more ambiguous, in that not *all* of nature can be said to be truly part of divinity. Nevertheless, god's immanent activity is crucial to this school, and thus god is certainly *part* of the world rather than simply *interacting* with the world (as in classical theism). In Alexander's formulation, god is the universe as tending towards deity, and the universe is seen as pregnant with divinity. Thus nature, or at the very least *part of* nature, is an essential part of the divine.

Quantum mysticism, as we have seen, includes a wide variety of stronger and weaker claims, but in the most overtly theologising form, it is again usually a panentheistic form of idealism. Jeans clearly moves in this direction, by portraying the world as a thought, or set of thoughts, contained in the mind of God, rather than as a separate creation in which humanity dwells in lonely exile. Other elements of quantum mysticism may lack a definite theological position, or be compatible in principle with several positions. For example, the stress on indeterminacy and rejection of strict causality undermines deism, but unless anything else is added, it could be equally combined with theism as with panentheism. Nevertheless, the general direction seems to be towards panentheistic conceptions.

Finally, psychic enchantment and modern alchemy are both more ambiguous than the three above, and we had a hard time finding any consistent and overarching theology springing out of these fields of speculative thought. Nevertheless, there is again a general direction in which they are both tending, and that is a direction which allows more immanent agency in the universe than is allowed in a strictly mechanistic worldview. Vitalism, mental control over matter, spontaneous transmutations, and matter possessing some degree of indeterminate and unpredictable agency all exemplify this direction. We have also seen that when more developed theologies do arise from these fields, they are allied with positions we recognise from the other schools of natural theology. In the case of psychic enchantment, we noticed both a direction towards the idealistic positions in physics, especially in the form of ether metaphysics, and a more original psychological reworking of Platonism, as in the case of Frederic Myers. The same tendency is identified in modern alchemy: when Sijil Abdul-Ali attempted to make a "Hermetic" reading of modern science he did so by interpreting the physical concept of "energy" as *anima mundi*, and the ether as the "Spirit of the

World". No matter how unconvincing or superficial we may find these synonymisations, the direction is clearly towards collapsing the distinction between nature and the divine, and localising aspects of god as immanent parts of the world itself.

* * *

I will close this chapter with some reflections on Charles Hartshorne's later musings on the possibility of natural theology, which seem to illuminate the connections between three major concepts that have structured our discussion so far: disenchantment, natural theology, and panentheism/cosmotheism. Hartshorne opened *A Natural Theology for Our Time* (1967) with an unusual dedication to a diverse band of historical figures, from the theologian Fausto Sozzini (1539–1604), to the physicist and experimental psychologist Gustav Theodor Fechner (1801–1887), to 20th century philosophers such as Muhammad Iqbal (1877–1938), James Ward (1843–1925), and Alfred North Whitehead. All of these, the author said, had defended varieties of a specific theological viewpoint: 'that the eternity or worshipful perfection of God does not imply his changelessness (or self-sufficiency) in all respects'.[275] 'Their reward for this achievement', Hartshorne continued, had been only the 'nearly complete silence or noncomprehension of historians, encyclopedists, and textbook writers'.[276]

What was the reason for this noncomprension and neglect? Hartshorne does not answer this question directly, but it shines through that it has to do with certain historical processes that have significantly narrowed the scope of intellectual options available in given historical periods. This narrowing down of the possibilities of legitimate thinking had in particular caused the demise of natural theology, according to Hartshorne, and it had happened during the Enlightenment. Pushing his own theological agenda, Hartshorne refused to accept that the intellectual boundaries drawn up two centuries prior should dictate what was legitimate to think in the present:

> The possibility of natural theology, or a theory of divinity appealing to 'natural reason ' – that is, critical consideration of the most general ideas and ideals necessary to interpret life and reality – is often said to have been thoroughly discredited by Hume and Kant. I do not share

[275] Hartshorne, *A Natural Theology for Our Time*, vii-viii.

[276] Ibid., viii.

> this trust in the ability of these men – whose climate of opinion was not ours – to settle for us, or for all time, the relations of theoretical reason to religion.

Connecting the dots to our previous discussion, the Enlightenment context that Hartshorne refers to was only one of the later steps in a longer history. The problem for the theological positions of those to whom the book was dedicated had started already when the biblical form of monotheism was favoured over the "evolutionary" variety (in Assmann's sense), and god's essence withdrawn completely from the natural world. The criticism that followed in the Enlightenment had sprung out of this particular theological tradition; quite literally, as Hanegraaff has shown, since the distinction that emerged in the Enlightenment between "proper philosophy" and "pseudo-philosophy" was constructed precisely on the basis of the heresiological criterion of Thomasius and Colberg. In this sense, the problem had always been philosophical "paganism". Consequently, the rise of new natural theologies in the wake of the secularisation of the academy in the 19th century signified the return of a pagan science.

All of this may shed some light on disenchantment. Hartshorne's refusal to follow Hume and Kant's rejection of natural theology may indeed be seen as an explicit rejection of disenchantment as well. As we saw in chapter one, Max Weber's conception of a disenchantment of the world was built on an unmistaken Kantian foundation. What is more, the blind spot of disenchantment covers precisely the kind of theological positions we have discussed here. The disenchanted world tolerated positions that kept the world completely autonomous and free of divine or spiritual agency of any kind, that is, positions such as atheism, agnosticism, or deism. Theism was still possible, but only through the pious humiliation of an intellectual sacrifice: *credo quia absurdum*. What was not permitted was the rational pursuit of divine or spiritual agencies in the natural world: the whole domain of natural theology, and the attendant theological positions of panentheism and cosmotheism, was out of bounds. Seen in this light, Weber's disenchantment thesis looks like a post-Enlightenment rephrasing of an older heresiological dictum. In the early decades of the 20th century, the new clothes in which the dictum had been dressed – most notably mechanistic natural philosophy – were being thrown aside by scientists, now working in an environment in which consistency with orthodox theological doctrines were neither required nor encouraged. Scientific professionals but theological amateurs, the new natural theologians of the early 20th

century could freely, and probably often unwittingly, return to heterodox, heretical, or "pagan" conceptions of god and the world.

PART THREE

LABORATORIES OF ENCHANTMENT

7

Against Agnosticism

Psychical Research and the Naturalisation of the Supernatural

> If we take in hand any volume of divinity, or school metaphysics, for instance, let us ask, Does it contain any abstract reasoning concerning quantity or number? No. Does it contain any experimental reasoning concerning matter of fact and existence? No. Commit it then to the flames; for it can contain nothing but sophistry and illusion.
>
> David Hume, *Inquiry Concerning Human Understanding*, (1748), Part XII, section III.

INTRODUCTION

The history of the term "agnosticism" is riddled with controversy. It has become a broad label signifying anything from a noncommittal open-mindedness about religion or "spirituality,"[1] to a reluctant or sceptical attitude towards any kind of phenomenon where an attitude of belief is logically possible. As we shall see in this chapter, however, the term was originally developed in the late 19th-century to denote a science-oriented position of religious non-belief, proposed as an alternative to the ostensibly more dogmatic atheism. Agnosticism was first and foremost a contribution to debates about epistemological attitudes towards religion and metaphysics, developed in the context of Victorian naturalism. It functioned as an important strategic concept in the emancipation of the academic disciplines from the clutches of theology.[2] At the time the

[1] As an example of the confusion about these terms in daily speech, it is notable that a 2010 survey showed a *majority* of self-described agnostics in the US (55 %) expressing "belief in God". Of these, furthermore, 17 % expressed that they were 'absolutely certain' of the matter. Intriguingly, the corresponding figures for self-styled "atheists" were 21 % and 8 %. These figures are quite remarkable considering the history of these terms and their intended meaning. See Pew Forum on Religion & Public Life, 'US Religious Landscape Survey, Report 2', 5.

[2] For an intellectual historian's perspective on the early history (and pre-history) of agnosticism, see Bernard Lightman, *The Origins of Agnosticism*.

word "agnosticism" was first uttered in 1869, theology still had significant power over university life. Religious tests were, for example, required for anyone wishing to obtain a position at the most prestigious British universities (i.e. Oxford, Cambridge, Durham) until 1871, when the Universities Test Act was passed.[3] In practice these tests were designed to exclude Roman Catholics (by requiring fellows to declare the doctrine of transubstantiation to be idolatrous), but also non-Christians and non-believers were affected by the requirement, and forced out of top institutions of education and research for purely theological reasons. Agnosticism was designed to counter the status of theology in the universities and in society at large by challenging all *empirical* claims made on religious grounds. Agnostics furthermore insisted that no-one should be publicly required to profess belief in any of the non- or trans-empirical doctrines that were beyond evidence and rational judgment. Following in the footsteps of Hume and Kant, the category of the supernatural was being dismantled into questionable claims about nature, on the one hand, and entirely transcendent and therefore unknowable things, on the other. Thus the authority of science was reinforced for all empirical matters while a strict epistemic boundary was erected, separating the purely transcendent claims of religion (which were of no empirical consequence) from science. Agnosticism, in this sense, represented a view entirely compatible with the disenchantment of the world.

By criticising the category of the "supernatural", agnosticism struck not only against Christian theology, however. *Anyone* who made supernatural claims and demanded to be believed by others came under attack. Such claims were not hard to come by. With the rise in authority of the natural sciences in the 19th century, the "scientific" had become a desired commodity, and claims to "scientific evidence" were made for all sorts of phenomena, "supernatural" or otherwise.[4] The rise of occultism and spiritualism in the 19th century is entirely symptomatic of this cultural climate: spiritualists claimed to provide empirical evidence of an afterlife, while occultists spoke

[3] For the text of the act itself, see anonymous, 'Universities Tests Act 1871'. For an overview of this and other legislation changing the interaction between religion and "secular" institutions in the period, see Russell Sandberg, *Law and Religion*, 23-30.

[4] See e.g. Olav Hammer, *Claiming Knowledge*, 201-330 ; cf. the contributions to Hammer & James R. Lewis, *Handbook of Religion and the Authority of Science*.

warmly of an emerging synthesis of religion and science.[5] Being a concept that was primarily directed at and discussed in academic and intellectual circles, agnosticism posed a particularly serious challenge for those academics who wanted to explore the empirical claims of spiritualists in a scientific manner. This was precisely the aim of psychical research.

The aim of the present chapter is to situate psychical research in the context of its epistemological struggle with agnosticism and scientific naturalism. Rather than seeing the alternatives that have been posited to agnosticism as wholesale revolts against naturalism, I argue that the public controversy that was sparked by agnosticism at the end of the 19th century should be seen as an epistemological debate *internal to* scientific naturalism. Agnosticism raised important questions about the limitations of natural knowledge, and the responses to it were part of a broader negotiation of where those boundaries were to be drawn. Psychical research took an active part in these negotiations, staking out a course that *agreed* with naturalists in emphasising empiricism, but *contested* the attempt of some agnostics to separate the claims of religion from the sphere of science. This latter aspect took the form of a movement against agnosticism in the psychical research literature, which provides us with an interesting entry point into questions that are of central importance for our continued focus on the problem of disenchantment. Psychical researchers' struggle with the strictures of agnosticism and the broader epistemic principles of scientific naturalism amounted to a response to the problem of disenchantment: it refused to separate the supernatural from the natural, and insisted that "occult" phenomena could be studied seriously from a purely scientific point of view.

The refusal to separate the supernatural from scientific discourse was a necessary requirement for establishing a discipline of psychical research in the first place. In this chapter we shall see *how* it was done, through the adoption of a number of different naturalising strategies. Merging the supernatural with the natural did not, however, mean instant enchantment. Demolishing the wall of separation that had been built between the scientific and the religious spheres by certain philosophers and theologians since the time of Kant, I shall argue, also made any "religious" claim vulnerable for severe criticism from a rational and empirical perspective. Ironically, the

[5] See e.g. Noakes, 'Spiritualism, Science and the Supernatural in mid-Victorian Britain'. For occultism and science, see part four of the present work.

most anti-religious of the agnostics – those who were already emphasising that there was very little left of religion once all of its "superstitious" empirical claims had been stripped away – were actually *accommodated* by psychical research's manoeuvre. This, I will suggest, has been one of the lasting paradoxes of psychical research.

1 The Agnosticism Controversy and the Epistemology of Scientific Naturalism

The word "agnosticism" was first uttered by Thomas Henry Huxley at a private party in 1869. Looking back at how the concept had come about, Huxley later recalled how he had seen himself forced to invent a new term because all of the available "-isms" concerned with religion, from atheism and pantheism to deism and theism, had seemed insufficient or faulty on various points:

> The one thing in which most of these good people [i.e. the atheists, pantheists, and theists] were agreed was the one thing in which I differed from them. They were quite sure they had attained a certain "gnosis"; had, more or less successfully, solved the problem of existence; while I was quite sure I had not, and had a pretty strong conviction that the problem was insoluble. … So I took thought, and invented what I conceived to be the appropriate title of "agnostic."[6]

This term, Huxley recalled, had come into his head 'as suggestively antithetic to the "gnostic" of Church history, who professed to know so much about the very things of which I was ignorant'.[7]

Writing two decades after he had first shared his newfound "-ism" with friends at a party, Huxley now found his agnosticism at the centre of a controversy raging between scientists, philosophers, and clergymen, concerning the relation between scientific methodology, supernatural beliefs, and religious faith. At a church congress in Manchester in 1888, Henry Wace, the prebendary of St. Paul's Cathedral and principal of King's College, London, had accused "agnostics" such as Huxley of simply having invented a new epithet for "infidels":

[6] Huxley, 'Agnosticism', 20-21.

[7] Ibid., 21.

> [Huxley] may prefer to call himself an agnostic; but his real name is an older one – he is an infidel; that is to say, an unbeliever. The word infidel, perhaps, carries an unpleasant significance. Perhaps it is right that it should. It is, and it ought to be, an unpleasant thing for a man to have to say plainly that he does not believe in Jesus Christ.[8]

According to Wace, the agnostic did not differ from the good Christian in his claim to hold no definite *knowledge* about transcendent realities, but rather in his refusal to accept the authority of the word of Christ through a leap of *faith*.[9] The lecture's theological condemnation was rather remarkable, seeing that it came from the principal of a major British research university, and it sparked a heated intellectual debate in the journals *The Nineteenth Century* and *The Fortnightly Review*.[10] Huxley, defending himself fiercely and with much eloquence in these forums, thus also got an opportunity to clarify the exact implications of his agnosticism. It is in this polemical context that the implications of Victorian agnosticism must be sought. As we shall see, the debate clarified and corrected some common misunderstandings about the position.

In his first reply to Wace, Huxley made it clear that the principal's understanding of agnosticism was based on certain grave misconceptions, which incidentally also made it possible for him to insist on labelling agnostics as good-old fashioned infidels.[11] There must have been an 'attractive simplicity to this solution', Huxley wrote, but labelling a philosophical opponent an "infidel" rested on the rather inelegant assumption that one's own position is right by default, and claiming therefore the right to morally judge the other based on whether or not this person agrees with one's own pre-set dogma.[12] The prerogative of denouncing the other as infidel, Huxley noted, becomes particularly absurd in the meeting of different cultures and religions with

[8] Wace, 'On Agnosticism', 7.

[9] This argumentation was not original. As Bernard Lightman has shown, this very point was made by the reverend Henry Longueville Mansel in lectures in the 1850s, which had a significant influence on at least Herbert Spencer's form of agnosticism. Mansel, on his part, was clearly influenced by the epistemological and theological debates concerning Kant and his critics, especially Jacobi. See Lightman, *Origins of Agnosticism*, 30-31. For the German context, see Terry Pinkard, *German Philosophy 1760–1860*, 87-104.

[10] Eleven essays were collectively published in Huxley et al., *Christianity and Agnosticism* (1889).

[11] See Huxley, 'Agnosticism'.

[12] E.g. ibid., 10.

opposing ultimate views, each equally an infidel in the other's eyes.[13] This, of course, was a standard argument against religious dogmatism. More importantly, Huxley argued that the "infidel" interpretation of agnosticism overlooked something else, which was for him perhaps the most defining aspect of the position: its relation to naturalism, the principles of empiricism, and the accumulation and criticism of the total canon of knowledge.

The agnostic, according to Huxley, does *not* simply refuse to consider stories of anything connected with "supernatural" beliefs, as being always *a priori* meaningless or *in principle* unknowable. It was at least not primarily on this foundation that the agnostic would have problems with, for example, the gospels. The concern was rather with authority – not necessarily 'the authority of Jesus Christ', as Wace had alleged, but the authority (or plausibility) of *witnesses*, versus the authority of established knowledge. As Huxley responded, 'the question as to what Jesus really said and did is strictly a scientific problem, which is capable of solution by no other methods than those practiced by the historian and the literary critic'.[14] The historian and the literary critic did not operate in a vacuum, however: a part of the wider family of secular academic disciplines, the humanities specialist was obliged to judge the trustworthiness of historical witnesses by holding their statements up against well-established knowledge from across the fields of science. Thus, for example, the proper agnostic reading of the famous exorcism passage in Mark 5, where Jesus expelled a legion of "unclean spirits" from a possessed man among the Gadarenes is *not* simply one of suspending belief or disbelief in the events as stated by the evangelist. The agnostic can draw upon a solid base of knowledge about how the world works, and, in this case, not least about the functioning of the mind and of the development of human cultures and belief systems:

> everything that I know of physiological and pathological science leads me to entertain a very strong conviction that the phenomena ascribed to possession are as purely natural as those which constitute small-pox; everything that I know of anthropology leads me to think that the belief in demons and demonical possession is a mere survival of a once universal superstition, and that its persistence at the present time is pretty much in the inverse ratio

[13] Ibid., 10-11.

[14] Ibid., 10.

> of the general instruction, intelligence, and sound judgment of the population among whom it prevails.[15]

Focusing on demonic possession was clearly a strategically advantageous choice for Huxley. Apart from being a subject of much scientific interest among psychologists and physicians, and thus an excellent example of a "supernatural belief" where competing naturalistic explanations were available, it was also an easy topic for the disbeliever to gain the moral high ground. Huxley needed only refer to inhumane horrors committed in the name of exorcism, or the prosecution of witchcraft, to argue that the belief was not only poorly founded, but that it also had a long history of particularly dangerous social and legal consequences.[16] In the end, the reasons to disbelieve the authority of the synoptic gospels on the accounts in question were connected with the three considerations, namely 'humanity', 'common sense', and 'science':

> *humanity*, noting the frightful consequences of this belief; *common sense*, observing the futility of the evidence on which it is based, in all cases that have been properly investigated; *science*, more and more seeing its way to inclose all the phenomena of so-called "possession" within the domain of pathology, so far as they are not to be relegated to that of the police – all these powerful influences concur in warning us, at our peril, against accepting the belief without the most careful scrutiny of the authority on which it rests.[17]

The bottom line for the agnostic was thus to not take anybody's word for it – even if it meant a break with piety. This, Huxley noted, led to a certain dilemma concerning the authority of scripture, as judged by the agnostic:

> I can discern no escape from this dilemma: either Jesus said what he is reported to have said, or he did not. In the former case, it is inevitable that his authority on matters connected with the "unseen world" should be roughly shaken; in the latter, the blow falls upon the authority of the synoptic gospels. If their report on a matter of such stupendous and far-reaching practical import as this is untrustworthy, how can we be sure of its trustworthiness in other cases?[18]

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[15] Ibid., 11

[16] Ibid., 11-12.

[17] Ibid., 12.

[18] Ibid., 12.

Unless one was willing to accept, on face value, that actual demon possession is possible, and that exorcisms like those of Jesus can be performed, the only choices left for the interpreter were to disbelieve the gospels or to question the integrity of Jesus.

The actual position of the agnostic is thus slightly different from the one that Wace had portrayed. It was not a stubborn refusal to believe in specific doctrines of faith, connected with entirely transcendent realities, but rather a *weighted* consideration and judgment of the *likelihood* of claims being true or not, in light of the total store of (scientific) knowledge. This consideration could not rule out the unreliability of witnesses, and would generally consider false testimony to be much more likely than the bending of natural law, especially in the case of obvious contradictions with established scientific knowledge. The valuing of evidence is thus a crucial element of Huxley's agnosticism which often gets overlooked or misunderstood – both in his own days and in later conceptions of agnosticism. The disbelief associated with agnosticism is *not* of a purely *a priori* character, but deals rather with the empirical (and rational) *justification* of beliefs and the *coherence* of knowledge in general. In his reply to Wace concerning demonic possession and exorcism, Huxley made this point clear:

> Let me be perfectly candid. I admit I have no a priori objection to offer. There are physical things, such as … *trichinae* [i.e. parasitic roundworms], which can be transferred from men to pigs, and *vice versa*, and which do undoubtedly produce most diabolical and deadly effects on both. For anything I can absolutely prove to the contrary, there may be spiritual things capable of the same transmigration, with like effects. Moreover, I am bound to add that perfectly truthful persons, for whom I have the greatest respect, believe in stories about spirits of the present day, quite as improbable as that we are considering. So I declare, as plainly as I can, that I am unable to show cause why these transferable devils should not exist, nor can I deny that, not merely the whole Roman Church, but many Wacean "infidels" of no mean repute, do honestly and firmly believe that the activity of such-like demonic beings is in full swing in this year of grace 1889. Nevertheless, as good Bishop Butler[19] says "probability is the guide of life" and it seems to me that this is just one of the cases in which the canon of credibility and testimony, which I have ventured to lay down, has full force. So

[19] Joseph Butler (1692–1752), the bishop, theologian, and philosopher who was a contemporary of, and influence on, such leaders of the Scottish Enlightenment as David Hume, Thomas Reid, and Adam Smith.

> that, with the most entire respect for many (by no means for all) of our witnesses for the truth of demonology, ancient and modern, I conceive their evidence on this particular matter to be ridiculously insufficient to warrant their conclusion.[20]

Despite its simplicity, this position has apparently been very hard to understand; when Wace replied once more to Huxley's defence, he wrote as if he had not grasped the point at all. Huxley had admitted that there were no *a priori* reasons to exclude the hypothesis of demons, Wace wrote triumphantly, and prematurely concluded that the battle had been won:

> Very well, then, as the highest science of the day is *unable to show cause against the possibility* of the narrative, and as I regard the Gospels as containing the evidence of trustworthy persons who were contemporary with the events narrated, and as their general veracity carries to my mind the greatest possible weight, I accept their statement in this as in other instances. … I repeat that I believe it [the Gadarene story], and that he [Huxley] has removed the only objection to my believing it.[21]

The conclusion Wace drew from Huxley, put in italics above, betrays a failure to grasp the most essential point of agnosticism, and that which truly distinguishes it from mere denial or refusal to believe: that the burden of proof falls on the person making a claim. Showing that a claim about a certain course of events is not *impossible* from a purely logical point of view can hardly count as a reason to believe that it actually happened. This is especially true if the claim contradicts alternative explanations of the event that are independently backed up by credible evidence. In a later essay in the same debate, Huxley made this point much clearer. Agnosticism means to adhere to a quite specific *epistemic principle*:

> This principle may be stated in various ways, but they all amount to this: that it is wrong for a man to say that he is certain of the objective truth of any proposition unless he can produce evidence which logically justifies that certainty. . . . That which agnostics deny and repudiate as immoral is the contrary doctrine, that there are propositions which men ought to believe,

[20] Huxley, 'Agnosticism', 15-16.

[21] Wace, 'Agnosticism and Christianity', 40. Emphasis added.

> without logically satisfactory evidence; and that reprobation ought to attach to the profession of disbelief in such inadequately supported propositions.[22]

The threat of reprobation for refusing to believe in propositions that have no support outside of theology was a very real one, insofar as the memory of religious tests in universities still lingered. This memory must have given the polemical statements of the university principal Wace a particularly unpleasant ring in the ears of professional scientists concerned with the free and frank pursuit of knowledge. While the agnostic position does not dismiss *a priori* the possibility of "supernatural" beings of some sort, it does claim that it is irrational to hold specific beliefs about them unless there is strong evidence backing the belief. Moreover, it is entirely *unreasonable* to expect others to accept one's personal belief in such beings without any justification: if one wishes for others to share one's belief, the task falls upon the claimant to produce evidence which 'logically justifies' one's certainty of the belief in question. In the case of Huxley, one might say that the epistemic principle of agnosticism leads to a *de facto* or *a posteriori* denouncement of the supernatural, a position against which one cannot simply argue by saying that it is "logically possible that" some supernatural being exists, or some supernatural event could have taken place. One must respect and play by the rules of empirical science. Huxleyan agnosticism might in this sense be described as "qualified", or "weighted disbelief".

Agnosticism, as it emerges from the writings of Huxley, is inseparable from the epistemology of scientific naturalism. If confronted with a phenomenon claimed by some person to be of supernatural origin, then the first thing the agnostic naturalist needs to do is to suspend judgement about the specific explanation offered, and ask instead if there are alternatives which would, in fact, render the phenomenon in question intelligible in light of the whole body of knowledge. If the phenomenon is only brought forward by testimony, then distrusting the accuracy or even the honesty of the witness is a perfectly viable option – contrary, no doubt, to good Victorian etiquette.

In closing this section, an illustration of how the naturalist's expulsion of supernaturalism could look like in practice may be provided by the psychiatrist Henry Maudsley's (1835–1918) tellingly entitled *Natural Causes and Supernatural Seemings* (1886). Maudsley was a leading authority on the mind and mental health in Victorian

[22] Huxley, 'Agnosticism and Christianity', 96-97.

Britain, working from an unmistakably materialistic, physiological basis. In his book on the relation between supernatural beliefs and natural causes, Maudsley took a decidedly reductionist approach. All claims about the supernatural could be accounted for by man's inherent tendencies towards 'malobservation and misinterpretation of nature', on the one hand, and genuine psychological disturbances, on the other: hallucinations, hysteria and other psychiatric pathologies.[23] Maudsley illustrates the Huxleyan point that one should start to look for explanations of seemingly inexplicable occurrences (and claims of such) among mechanisms that one *does* know something about. In Maudsley's case, a firm footing was found in well-established knowledge of human nature, propensities to error and bias in observation and interpretation, and in various psychological conditions.

Huxley and Maudsley represent the mainline of scientific naturalism, but its epistemology on a whole was not entirely settled, nor without internal challenges. As I will venture to show in the next section, psychical research grew out of disputes over the reach of naturalism in which the question of agnosticism was particularly acute. I will suggest that psychical research was part of an alternative strand of naturalistic epistemology which might be called "open-ended naturalism".

2 Psychical Research as Open-Ended Naturalism

The exact meaning and implication of agnosticism was not clear at the close of the 19th century. Between 1896 and 1898, the psychologist and philosopher James Ward gave a series of Gifford Lectures on the topic, published in 1899 as the two-volume *Naturalism and Agnosticism*.[24] Ward argued that agnosticism, despite having been developed as a

[23] Maudsley, *Natural Causes and Supernatural Seemings*, 354.

[24] For the record it should be noted that this was only one in a series of philosophical works struggling with the relation between agnosticism, science, naturalism, and religion in the late-Victorian period. Another notable example is the philosopher Ferdinand S. C. Schiller, who represent an intriguing pragmatist school, similar in some respects to that of William James. His *Riddles of the Sphinx* (1894) aimed to set forth a 'philosophy of evolution', and to argue against agnosticism in its 'Kantian' and 'Spencerian' interpretations (e.g. pp. vii-ix, 16-56). Intriguingly, Huxley is not even mentioned in this work, even though agnosticism is one of its primary concerns. Schiller is also of interest here because he was a partial defender of psychical research. See e.g. Schiller, 'Some Logical Aspects of Psychical Research'.

naturalistic response to religion and supernaturalism, in fact had ended up corroding the philosophical basis of naturalism itself. To reach that conclusion, Ward relied on two assumptions, one about naturalism and the other about agnosticism. First, naturalism's philosophical foundation was seen to be materialism; second, agnosticism was taken in its meaning of the limitation of knowledge concerning metaphysics. On these definitions, the pair becomes something of a contradiction in terms, for *materialism* is a *metaphysical* position which goes beyond mere appearances, while *agnosticism* presumes to limit one's enquiry strictly to the phenomenal world. Ward thus visibly embeds his analysis in Kant's distinction between the phenomenal and the noumenal, but also offers a response to Hume's radical insistence that there can be no real knowledge about anything that is neither quantifiable nor empirically verifiable.[25] Both Kant and Hume are seen as originators of agnosticism in this sense, but it was the naturalists of Ward's own century – especially Huxley, Spencer, and Tyndall – who had merged the doctrine with a materialist metaphysics. They had thus added to science a dimension of "knowable and unknowable", which entailed a scepticism that, according to Ward, was at *odds* with the project of "naturalism" as he understood it:

> the distinction of known and unknown, as science intends it, is, we may say, a mere objective distinction of fact; the distinction of knowable and unknowable as used by the agnostic, on the other hand, brings the knower himself to the fore, and entails an examination both of the standpoint and of the premises from which science, without any preliminary criticism, set forth. In other words, Naturalism is essentially dogmatic, whereas Agnosticism is essentially sceptical.[26]

Ward did not stop there, however, but stretched the point to suggest that agnosticism, in fact, seemed to lay the foundation for a revival of *idealism* (or "spiritualism", which he

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Moreover, Schiller's philosophy of evolution seems to prefigure some of the later ideas of emergentism, which we have discussed previously.

[25] See e.g. Ward, *Naturalism and Agnosticism*, 1-36. Again, many of these questions concerning agnosticism and metaphysics appear to have been prefigured in the German philosophical and theological responses to Kant's critical philosophy around the year 1800. The exact relation between these earlier debates and the later manifestations in the context of Victorian naturalism, including not only the structural similarities, but also the unique characteristics of these different contexts, would require a substantial independent study. Cf. Pinkard, *German Philosophy 1760–1860*.

[26] Ward, *Naturalism and Agnosticism*, viii.

somewhat confusingly termed it). Similar to arguments we have seen in the context of idealistic natural theologies, Ward approached this conclusion by emphasising scepticism, demanding that the philosopher starts with immediate *experience* and hence with consciousness and mind. In a familiar fashion, thus: 'It is only in terms of mind that we can understand the unity, activity, and regularity that nature presents. In so understanding we see that Nature is Spirit.'[27] Ultimately, Ward saw this revival of idealism as a necessary first step for contending even the very possibility of *theism*. From the perspective of the agnostic epistemology we have considered above, however, one is still left to wonder how much value there was in such speculative arguments: even if one conceded that the *possibility* of theism had been proved, the agnostic would still require much more in terms of *plausibility* based on empirical evidence before ever converting to an actual *positive* position of theism. To the committed agnostic, Ward's argument would look like little more than a play with words: fascinating and sophisticated, perhaps, but ultimately of little or no consequence.

As Frank Miller Turner has shown, Ward was part of a broader movement in late-Victorian intellectual life that contested the hard line of scientific naturalism, seeking to open it up for a religious and spiritual dimension.[28] Among the other notable intellectuals discussed by Turner we find two of the original founders of the Society for Psychical Research, Henry Sidgwick, the professor of moral philosophy at Trinity College (who incidentally helped Ward to a position at Cambridge University, and also protested in favour of the 1871 act to get rid of religious tests at the university), and Frederic Myers, whom we have already been acquainted with in chapter six.[29] It is notable that Myers' *Human Personality and Its Survival of Bodily Death*, the standard work of psychical research which was published at the opening of the 20th century, started off with a consideration of agnosticism in its very first chapter. However, while Ward had been moved to see agnosticism as leading, through philosophical scepticism, ultimately to idealism and a possible defence for theism, Myers, considering things from an empirical and scientific rather than a purely philosophical point of view, saw

[27] Ibid., xii.

[28] Turner, *Between Science and Religion*.

[29] For the foundation of the SPR, and biographical details on those involved, see Gauld, *The Founders of Psychical Research*.

agnosticism solely as an obstacle, and a dogmatic one at that. In fact, and in strict contrast to Huxley, he saw agnosticism as being *adverse* to the scientific method itself.

The first chapter of *Human Personality* is a defence of the project outlined by the book, namely to apply, at long last, the best route to knowledge ever developed by human kind – science – to one of the questions that has most interested humanity since the dawn of history – that of the survival of the personality after bodily death. Scientific method 'has never yet been applied to the all-important problem of the existence, the powers, the destiny of the human soul', Myers complained, and the reason for this astonishing neglect he found in "agnosticism", broadly conceived: 'That resolutely agnostic view – I may almost say that scientific superstition – "ignoramus et ignorabimus" – is no doubt held at the present date by many learned minds.'[30] But, Myers continued, the agnostic view that no real knowledge of spiritual things could be achieved has 'never been the creed, nor is it now the creed, of the human race generally':

> In most civilised countries there has been for nearly two thousand years a distinct belief that survival has actually been proved by certain phenomena observed at a given date in Palestine. And beyond the Christian pale – whether through reason, instinct, or superstition – it has ever been commonly held that ghostly phenomena of one kind or another exist to testify to a life beyond the life we know.[31]

The point was not, of course, to simply reiterate the old argument from tradition, as Henry Wace had done in his debate with Huxley. Myers' point was rather to *criticise* the tendency, even among those who thought survival to have been demonstrated by the example of Christ, to not seek any further corroboration, but rather separate this domain of enquiry entirely from the domain of science. In Myers' own words, these people

> have not sought for fresh corroborative instances, for analogies, for explanations; rather they have kept their convictions on these fundamental matters in a separate and sealed compartment of their minds, a compartment consecrated to religion or to superstition, but not to observation or to experiment.[32]

[30] Myers, *Human Personality*, 1.

[31] Ibid., 2.

[32] Ibid.

This separation clearly reminds us of the dictums of disenchantment: religion must be separated from scientific and empirical discourse in order to be "valid". It was, however, precisely this chasm between scientific inquiry and religious belief that Myers wanted to bridge. In fact, the whole project of psychical research depended on overcoming this divide. 'It is my object', Myers wrote, 'as it has from the first been the object of the Society for Psychical Research',

> to do what can be done to break down *that artificial wall of demarcation* which has thus far excluded from scientific treatment precisely the problems which stand in most need of all the aids to discovery which such treatment can afford.[33]

Breaking down this 'artificial wall of demarcation' between the "natural" and the "supernatural" implied a move towards what might be called an "open-ended naturalism". This position was based on anti-agnosticism, and, implicitly, anti-Kantianism. In order to defend such a view, however, it was also necessary to rethink the category of the "supernatural" itself. The supernatural seemed to suggest either a contrariety to nature and natural law, or a complete ontological breach from it; on these grounds it signified something which, even if it did exist, would be impossible to study in a satisfactorily fashion from the position of natural science. Myers' solution to this problem was to dispense of the term supernatural altogether, proposing the term "super*normal*" instead. As he explained:

> The word supernatural is open to grave objections; it assumes that there is something outside nature, and it has become associated with arbitrary interference with law. Now there is no reason to suppose that the psychical phenomena with which we deal are less a part of nature, or less subject to fixed and definite law, than any other phenomena.[34]

Myers proposes a definition that moves away from the unexplain*able* towards the as of yet unexplained. Considered in relation to the other naturalistic sciences, the supernormal thus takes on the character of a *residual* category: it included everything

[33] Ibid. Emphasis added.

[34] Ibid., xxii.

that remained anomalous or had been pushed aside from the established fields of science, whether by neglect, stigma, or stultification. The implied understanding was, of course, that the natural sciences had missed out on something, and that current explanatory schemes were insufficient or even narrow-minded.

At this point we should consider what the exact relation is to Huxley's brand of agnosticism. The kind of agnosticism attacked by Myers in the opening sections of *Human Personality* is, in fact, *not* exactly identical to the view defended by Huxley. The attitude of the Huxleyan agnostic to spiritualism, for example, would be pretty much the same as his attitude to demonic possession: he would be willing to concede that there is no *a priori* reason why it should not be possible *in principle* for some spirit entity to communicate through the mind and body of a living being. The analogy to parasites would be no less fitting than it had been in the case of demonic possession. The problem for the agnostic, however, would be with plausibility based on prior experience and knowledge, and the weighing of evidence in relation to those factors. The main difference between a Huxley and a Myers comes down to how they do the weighing, and what they consider, *prima facie*, to be plausible entities to find in nature. Whereas the agnostic would call for a patient suspension of judgement concerning extraordinary phenomena that appear unexplained, the psychical researchers were not afraid to start theorising and hypothesising on the assumption that things are, more or less, what they *appear* to be. They were also less concerned with restricting explanations to well-understood mechanisms, such as psychopathology, hallucination, or perceptual illusion. When Myers wrote that the supernormal comprised any 'faculty or phenomenon which goes beyond the level of ordinary experience, in the direction of evolution, or as pertaining to a transcendental world', he in fact opened the door for an entirely new order of explanations. This became particularly clear when he added that some psychical phenomena

> appear to indicate a higher evolutionary level than the mass of men have yet attained, and some of them appear to be governed by laws of such a kind that they may hold good in a transcendental world as fully as in the world of sense. In either case they are above the norm of man rather than outside his nature.[35]

[35] Ibid.

For Myers, then, the "supernormal" is connected to a peculiar form of evolutionism in which his whole system was imbedded. The non-apprehension of these phenomena is partially due to us viewing them from a benighted state. This idea is, in fact, reminiscent of the argument of the emergentists of the 1920s, particularly Samuel Alexander, for whom any "higher" phenomenon would be in principle unintelligible if viewed solely from "below".[36] In any case, it was a way to attempt to save the supernormal for an open-ended naturalism; thus, for Myers, the possibilities of naturalism were opened up by considering the potentialities of "evolution".[37] By emphasising that nature was changing, and claiming to be studying the cutting edge of that evolutionary movement, Myers would remain a naturalist while allowing for a broader range of phenomena to be taken seriously as part of (emerging) nature.

* * *

The battle against agnosticism has remained a recurring theme for psychical researchers, particularly through their defence of a radical and extended form of empiricism against any *a priori* distinctions and epistemological arguments that would threaten the field as a whole. After Myers, we find the debate again taken up by William McDougall in the 1920s. Significantly, McDougall's attack on the agnostic principle was part of a campaign to make psychical research a professional branch of science, embedded in university structures.[38] That quest will occupy us at length in chapter nine; at present, however, we should note that McDougall's anti-agnosticism was even

[36] See my discussion in chapter six.

[37] In reference to my discussion of different evolutionary schemes in a previous chapter, it is not altogether clear what kind of evolutionary conception Myers was really following. As such his writings on the topic are characteristic of the early phase of the so-called "eclipse of Darwinism". What is evident is that Myers' position is not Darwinian, and too early to be Mendelian. There seem to be some elements of orthogenesis, and certain hints at Lamarckism: Myers stresses the *continuity* of evolution, and seems able to suggest concrete courses of future evolution by observing so-called "degenerates" (e.g. those suffering from "nervous" and "hysterical" disorders) – some of whom he suggests might better be seen as "protogenerates", since their mental abnormalities may point towards certain higher functions that will become the 'norm of man' in the future. Myers linked this future path of evolution to an uprush from the subliminal to the supraliminal region of the mind (see especially Myers, *Human Personality,* vol. I, chapter III). Evolutionary speaking, these ideas seem to suggest an underlying orthogenetic theory of unilinear, even "progressive" evolution. Compare with figure 7 at the end of chapter five.

[38] See Asprem, 'A Nice Arrangement of Heterodoxies'.

stronger and more polemical in tone than Myers' had been a quarter of a century earlier. Any opposition to psychical research, McDougall argued, must

> arise from narrow dogmatic ignorance, that higher kind of ignorance which so often goes with a wealth of scientific knowledge, the ignorance which permits a man to lay down dogmatically the boundaries of our knowledge and to exclaim "ignorabimus." This cry – "we shall not, cannot know!" – is apt to masquerade as scientific humility, while, in reality, it expresses an unscientific arrogance and philosophic incompetence.[39]

In McDougall's view, agnosticism taken as a methodological principle for academic research is to be viewed merely as a 'higher kind of ignorance', which tries to authoritatively enforce its rigid boundaries of what can possibly be known. Once again, however, the kind of agnosticism that comes under attack is different from that initially formulated by Huxley. What McDougall attacks is the kind of agnosticism that withdraws "the supernatural" from the "natural", and states dogmatically (or by recourse to the *a priori*) that the former is *by definition* unreachable, ineffable, and transcendent. Again, the distinction is crucial because it separates the question of what we *do not* know from what we *cannot* know. It is the claim that we cannot know – *ignorabimus* rather than *ignoramus* – that McDougall detests. Indeed, he seems to be speaking with all the epistemic optimism of the Victorian naturalists when he continues to state that

> To cry *ignorabimus* in face of the problems of Psychical Research, and to refuse on that ground to support or countenance its labour, is disingenuous camouflage; for the assertion that we shall not and cannot know the answers to these problems implies a knowledge which we certainly have not yet attained and which, if in principle is attainable, lies in the distant future when the methods of Psychical Research shall have been systematically developed and worked for all they may be worth. The history of Science is full of warnings against such dogmatic agnosticism, the agnosticism which does not concern itself with the frank and humble avowal that we do not know, but which presumes to assert that we cannot know.[40]

[39] McDougall, 'Psychical Research as a University Study', 154.

[40] Ibid., 154.

Dismissing psychical research on *a priori* grounds is thus to deny its research programme a chance to prove itself. If, after continued efforts to investigate psychical phenomena, one still could not say anything definite about them, *then* it would be legitimate to speculate about epistemological boundaries – but not before. Quite contrary to the transcendental critical philosophy of Kant and his followers, the question of where the boundaries of natural knowledge are to be drawn is *itself* an empirical matter, to be settled through scientific trial and error. In fact, this was the only truly scientific and truly empirical manner of proceeding, and it is clear that McDougall was employing a "more scientific than thou"-tactic against his academic opponents. 'Dogmatic agnosticism', on his reading, already assumed a conclusion to the very questions which psychical research wanted to ask.

With McDougall urging this point in 1927, it is worth noting that even a leading spokesperson obviously did not consider psychical research to be an established or "mature" science at that point. It had not led to significant results, and its theories and classifications were not yet sophisticated enough to be taken seriously by other fields. While this was the verdict of a prominent second-generation scholar, the founding generation had also stressed that psychical research was an infant discipline, which could not yet be expected to compete with its fully fledged and mature siblings.[41] Myers had even described psychical research as a kind of proto-science, to be compared with other pre-scientific endeavours that had only much later grown into proper scientific fields:

> … by the word "scientific" I signify an authority to which I submit myself – not a standard which I claim to attain. Any science of which I can here speak as possible must be a *nascent* science – not such as one of those vast systems of connected knowledge which thousands of experts now steadily push forward in laboratories in every land – but such as each one of those great sciences was in its dim and poor beginning, when a few monks groped among the properties of "the noble metals" or a few Chaldean shepherds outwatched the setting stars.[42]

Still a 'dim and poor' proto-science, psychical research could only attempt to blossom by demanding that the gates at nature's borders not be closed prematurely.

[41] See the following chapter for a periodization of the development of psychical research into three distinct generations.

[42] Myers, *Human Personality*, 2.

3 Strategies of Naturalisation

If contesting agnosticism in the context of psychical research meant adopting a naturalistic approach to phenomena such as spiritualism, there was still a plethora of different strategies to choose from in order to achieve such a naturalisation in practice. These strategies would involve different and sometimes mutually exclusive hypotheses about the phenomena in question. In the present section I shall attempt a broad classification of such naturalisation strategies, briefly exemplify them, and look at their relation to each other.

We may distinguish between three main types of naturalisation in psychical research. Staying close to terminology that had become established by the end of the 19th century, these may be called "spiritualistic", "animistic", and "reductionist" strategies. The distinction between "animists" and "spiritualists" was particularly noticeable in German psychical research in the 1890s; it was, for example, put forward as such in Aleksandr Aksakov's *Animismus und Spiritismus* – essentially a polemical defence of the latter against the "animist" psychical researcher and philosopher Eduard von Hartmann (1842–1906).[43] In this context, "spiritualism" refers to the "spirit hypothesis" of mediumism, construed here as a *naturalising* approach that allows for the existence and activity of disembodied spirits within nature. Reference to such spirits are then used to explain the most extravagant phenomena of spiritualism, as well as phantoms, ghosts, haunted houses, and related phenomena. This position is practically inseparable from the rhetoric of the spiritualist movement itself, being a position that the more scientifically minded adherents of spiritualism would profess. Indeed, as Richard Noakes has shown, a "naturalistic spiritualism" along these lines was propounded by some of the most influential spiritualist spokespersons, such as William Henry Harrisson, the editor of one of the movement's most successful journals, the *Spiritualist* (founded 1869).[44] The only thing needed for it to count as a naturalistic strategy, was to insist that the activity of spirits can somehow happen in accordance with natural law.

[43] For the German context of this debate, see Wolffram, *Stepchildren of Science*, 33-71.

[44] See Noakes, 'Spiritualism, Science, and the Supernatural in Mid-Victorian Britain', 30.

By contrast to the spiritualist hypothesis, *animism* denotes a strategy that seeks the origin of psychical phenomena in the organism of human beings – whether through the use of extraordinary faculty by especially "gifted" persons, or through spontaneous cases in ordinary people. This line of naturalisation is obviously still outside the pale of mainstream scientific knowledge, but moves somewhat closer to scientific plausibility structures by disregarding the action of spirits and focusing instead on the activities of this-worldly organisms. It moves in the direction of biology and psychology, with obvious links to the vitalistic strands of those disciplines. Finally, *reductionism* refers to two different kinds of strategies. The first type may be called "positive", in that it considers most of the cases of psychical research to be genuine, but proceeds by suggesting specific lower-level mechanism at work behind the phenomena. The classic example of positive reductionism in this sense is the brain-wave hypothesis of telepathy. Finally, the second type of reductionism is "negative", and amounts to reducing *away* the phenomena entirely. This naturalistic strategy would explain the phenomena as illusory, holding that they are really the result of some other and well-known phenomenon, such as trickery, illusion, hallucination, psychopathology, psychological bias, or a combination of such factors. This latter form of reductionism was the official naturalist line, and the line of Huxley's agnosticism, as we have seen it expressed earlier in this chapter. I will suggest that the supreme irony of the psychical researchers' stress on a naturalisation of the supernatural is that it led to a direct confrontation with this particular kind of sceptical agnosticism. Indeed, naturalisation based on a negative reductionist strategy is associated with psychical research's most persistent enemy: the "scientific skeptic".

All these naturalisation strategies are found within the psychical research community from its inception, and have continued to compete for dominance throughout the 20th century (see figure 9). Moreover, they are not mutually exclusive: it is possible for a researcher to explain some phenomena away as trickery, while reserving genuineness for others. As a rule, however, the field moved away from the spiritualist hypothesis, and has generally centred on forms of animism during the period that concerns us the most. The exact way in which these strategies and explanatory models were connected to social formations, research practices, contests with other scientific disciplines, and attempts to professionalise psychical research will

be explored in the following two chapters. At present, we should aim to exemplify some of these positions, and trace the patterns of their evolution.

Figure 9: Naturalisation strategies in psychical research

Spiritualist	Animist	Reductionist	
		Positive	Negative
Spirits active in the natural world; expansion of natural borders.	*Unknown properties of the (human) organism responsible for psychic phenomena; non-mechanical vitalistic forces.*	*Phenomena explained by underlying mechanisms; e.g. brain-waves; electromagnetic fields.*	*Phenomena are illusory; reduced to trickery, fraud, bias, psychopathology.*
Examples: A. R. Wallace O. Lodge (late period)	Examples: von Schrenck-Notzing H. Driesch W. McDougall	Examples: O. Lodge (early) U. Sinclair	Examples: T. H. Huxley J. Jastrow H. Houdini

An early work pointing the way towards psychical research is found in the famous naturalist Alfred Russel Wallace's (1823–1913) *Scientific Aspect of the Supernatural* (1866), which, as the subtitle of the book suggests, argued for 'an experimental enquiry by men of science into the alleged powers of clairvoyants and mediums'. The booklet defended a variety of the naturalised spirit hypothesis. Wallace, best known today as co-inventor of the Darwinian theory of selection, argued in this short work that there should be no objections in principle against the postulation of intelligences beyond the ordinary knowledge sphere of humanity. Making an analogy to recent discoveries in biology of forms of life so small that no-one had previously seen them, Wallace argued that there might be living entities not discoverable by the ordinary senses, or with surprising physical properties that have so far eluded scientific observation.[45] At the same time, thitherto undiscovered laws of nature might govern what seemed like "supernatural" events, making them instead instances of not-yet-

[45] Wallace, *Scientific Aspect of the Supernatural*, 1-5. Cf. Noakes, 'Spiritualism, Science, and the Supernatural in Mid-Victorian Britain', 30.

discovered natural features. Wallace thus suggested that spiritualism might teach us that nature includes much more life and agency than previously thought.

We also recognise a form of this strategy in Oliver Lodge's later ether metaphysics. Lodge's concept of "ether bodies" was especially designed to create a space within the natural world where spiritual activity could take place without being contrary to natural law. His system suggested that all mental activity and all animation of life in fact happens through the ether, and that one might therefore expect to find disembodied mental and vital activity on the etheric plane – sometimes interacting with ordinary tangible matter.[46] As already suggested, we might also find Myers within this category, although his efforts to systematise the whole of psychical research led him to a position which covers much more than the spiritualist hypothesis alone. What is clear is that survival after death *is* thought possible in Myers' system, and moreover explicable within an open-ended naturalistic framework.

The spiritualist hypothesis enjoyed a revival in the aftermath of the Great War, both within psychical research and among the broader public. As we shall see in the next chapter, a controversy concerning the spiritualist hypothesis led to complete fragmentation in American psychical research in the 1920s, where spiritualists such as Lodge and Arthur Conan Doyle had won over some of the SPR communities, while scepticism was on the rise, bolstered, no doubt, by America's most popular debunker, the magician and escape artist Harry Houdini. In the middle of all this, however, animist strategies were adopted by the more scientifically minded parts of the psychical research community, both in the United States and in Europe. These strategies were typically connected with the neo-vitalism vogue that we have discussed at some length in previous chapters. The main animists were no doubt Hans Driesch and William McDougall, both of whom connected parapsychological abilities with vitalistic functions of the human organism and psyche. Other animists were less philosophically inclined; notably, the "spirit baron" Alfred von Schrenck-Notzing of Munich held an animistic theory to be the best for explaining the excretion of ectoplasm from his mediums' bodies during his laboratory experiments, and for paranormal feats in general.[47]

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[46] Cf. my discussion of Lodge's ether metaphysics in chapter six. A variety of this line of speculation was already available in Balfour Stewart and P. G. Tait's *The Unseen Universe* (1875).

[47] Cf. Wolffram, 131-189. See also my discussion in the next chapter.

While animism did stress that the phenomena observed were in accordance with naturalistic principles, the vitalistic stance typically meant that they were at odds with *mechanistic* explanations. Indeed, for both Driesch and McDougall, the animistic strategy of interpreting parapsychological effects became part of the evidential basis for a more general case *against* the mechanistic philosophy as such, particularly as employed to the study of life and mind. For these authors, the phenomena of psychical research were not merely strange "freaks of nature", but rather became the purest and thus most illustrative examples of the uniqueness and irreducibility of life. By stressing animism as a naturalising strategy (and thus remaining aloof to the category of the "supernatural"), they sought to redefine the frameworks for understanding nature as such – at the expense of mechanism and in the direction of neo-vitalism and organicism.

Another naturalising strategy that has returned time and again within psychical research and in the popular consciousness is the "positive" reductionist approach of postulating fundamental physical mechanisms that would "explain" the phenomena observed. This strategy is at odds with the animistic one primarily in that it tends to rest on mechanism, and, moreover, usually appeals to *physics* where the animist appeals to biology and psychology. Thus, for example, the single most popular line of explanation was born squarely from Maxwellian field theory in the 1880s, when Oliver Lodge made his first attempt at explaining "thought-transference" through the supposition of "brain waves" transmitted through electromagnetic fields of thought in the ether surrounding the brain. This line of explanation was fleshed out further by William Crookes (1892), E. J. Houston (1892) and J. Knowles (1899), but by 1900, it rapidly lost most of its credence, and became much less popular among scientifically minded psychical researchers in early decades of the 20th century. In the popular literature surrounding psychical research, however, it has remained very influential, as seen for example in the American journalist and novelist Upton Sinclair's hugely successful *Mental Radio* (1930).

The problem with the brain-wave hypothesis was that it ran into certain purely *experimental* anomalies that it was unable to explain. Judging from the experimental evidence for thought-transference that had piled up in the decades prior to 1900, there seemed to be no correspondence between the *distance* of the communicating minds and the *accuracy* of the effect. This was troublesome to physicists and philosophers with an understanding of classical mechanics, because it violated the inverse-square law: the force of any physical effect should be inversely proportionate to the square of the

distance from its source. If telepathy was indeed an electromagnetic phenomenon, explainable within the framework of Maxwellian field theory, its effect would be expected to decrease with distance. By the early 1900s the leading physicists of the SPR were forced to conclude on this basis that telepathy was just as badly in need of an explanation as any spiritualist hypothesis; it did not behave as a mechanical phenomenon, hence brain-waves could not be the explanation.[48] The explanatory failure of the brain-wave theory helped facilitate, at least temporarily, a new regard for the spiritualist hypothesis, as well as inciting interest in the less reductionist animistic theories. However, it also became a serious point of criticism from sceptics. Thus, for example, Albert Einstein, who had originally contributed a short prefatory note to Upton Sinclair's *Mental Radio*, cautiously commending the research while not committing himself to the author's conclusions, referred to this problem in two letters to the psychiatrist Jan Ehrenwald – published much later by the American mathematician and sceptic Martin Gardner.[49] In these letters, responding to the famous results produced by Joseph Banks Rhine in a later phase of psychical research, Einstein drew attention to the lack of a decline with distance. This was a suspicious feature, in and in his opinion suggestive that the consistent positive results were due to some undiscovered methodical error. In his second letter, Einstein supported this claim by noting how a seemingly insignificant methodical error could, in fact, lead to very significant artefacts in this type of statistical experiments.[50]

These considerations lead us to the final type of naturalising strategy, namely that which I termed "negative" reductionism. Examples of this strategy are found among the mainliners of Victorian naturalism, in the writings of scientist such as Huxley and Maudsley. The physiologist and zoologist William Benjamin Carpenter (1813–1885) took the discourse of morbidity even further, accounting for spiritualism in terms of 'epidemic delusions', spreading through certain erroneous 'dominant ideas' that activated automatic mental reflexes and control of motor responses.[51] These naturalist

[48] E.g. Lodge, 'Presidential Address, March 1902'; William Barrett, 'Presidential address, January 29th 1904'; cf. Noakes, 'The "World of the Infinitely Little"', 327-328.

[49] See Gardner, 'Einstein and ESP'; idem, 'A Second Einstein ESP Letter'. Gardner included a heavy attack on Rhine in his own book, *Fads and Fallacies in the Name of Science* (1952), 299-314.

[50] See Einstein cited in Gardner, 'A Second Einstein ESP Letter', 82-83.

[51] Cf. Noakes, 'Spiritualism, Sceince and the Supernatural', 31-32.

authors generally appealed to psychopathology, malobservation, suggestion, bias, and so forth, as seen in the case of Maudsley. In the 20th century, this line of scepticism was taken up by professional psychologists. Joseph Jastrow's *Fact and Fable in Psychology* (1900) was an important title for the continuation of this discourse in the 20th century. It started off with chapters on 'The Modern Occult' (which included Theosophy, spiritualism, and Christian Science, but also alchemy, astrology, phrenology, and other "pseudo-sciences"), continued with 'The Problems of Psychical Research' and 'Mental Telegraphy', before moving into 'The Psychology of Deception', and numerous chapters on psychological biases, perceptual illusions, hypnotic suggestion, involuntary muscle movement, and so on. The book became the foundation work of an emerging "psychology of the occult", which presented a whole arsenal of hypotheses to promote a complete reduction of alleged supernormal phenomena.[52] Needless to say, this stream of thought became extremely influential on later critics of psychical research and parapsychology, and continues to be one of the pillars of the contemporary "skeptics' movement".[53]

Another strong tradition of scepticism towards psychical research came from a less scientific source: stage magic. As it turned out, no-one was better equipped to advance the hypothesis of fraud than those who had made it their profession to work with illusions and trickery. The stage magicians had, of course, also their professional stakes at risk in competition with spiritualist mediums – thus it became a standard part of magicians' repertoire to show how spiritualists merely dressed up the same tricks in a guise of supernaturalism. In fact, it is hardly coincidental that the stage magicians involved themselves in this quarrel with spiritualism at the same time as their trade was going through a phase of professionalization, attempting to heighten the prestige of this traditionally "low-culture" practice. Thus, one of the pioneers of stage magic's transition from low-culture juggling to gentleman's fashion, Jean Eugène Robert-Houdin

[52] For a discussion of this trend in Germany, see Wolffram, *Stepchildren of Science*, 263-294.

[53] Among contemporary psychologists working in this tradition, linking psychological research to criticism of parapsychology and related currents, we can mention Ray Hyman, whose *The Elusive Quarry* (1989) is a standard work for criticisms of modern parapsychology, and Richard Wiseman, who has written books such as *Quirkology* (2007) and *Paranormality* (2010), exploring the science of perceptual errors, biases, and illusions, applied to explaining parapsychological and "supernatural" beliefs, and intended for a broader non-academic public.

(1805–1871), was involved with the debunking of modern mediums and "traditional" miracle workers – including a famous exposé of Sufi marabouts in Algeria.[54] In Britain, the high profile stage magician John Neville Maskelyne (1839–1917) was well known for debunking mediums, publishing a book exposing the main conjuring tricks used in spiritualist performances in 1876.[55] In the early 20th century, Harry Houdini (Erik Weisz, 1874–1926) famously made a career out of debunking spiritualists in America, with much publicity and to the irritation of certain spiritualist-friendly psychical researchers.[56] His exposé of the Boston medium "Margery" (Mina Crandon, 1888–1941) in 1924 was particularly devastating, since the SPR had invested much prestige in this particular case.[57] Indeed, it had attracted much media attention after the journal *Scientific American*, then led by pro-spiritualist editor J. Malcolm Bird (1886–1964), had set down a committee to investigate her, with a prize of $ 2,500 to be awarded if she passed the test.[58] The committee decided she did not, even though Bird himself prematurely published an enthusiastic report without informing the committee members. Shortly after the affair, Bird resigned from *Scientific American*, and took up work for the American Society of Psychical Research instead.[59]

Whether relying on references to psychopathology, or the exposition of fraud, or even the *suggestion* of how a certain phenomenon *could* be produced through methods found in the stage magicians' book of tricks, the point for the negative reductionist strategy was that well-tested mechanisms which can account for the observed phenomena ought to be preferred to explanations invoking new mysteries. And, one

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[54] See e.g. Michael Mangan, *Performing Dark Arts*, 102-115.

[55] Maskelyne, *Modern Spiritualism*. On the history of stage magic in Britain, see Michael Bailey, *The Magic Circle*.

[56] See e.g. Houdini, *Miracle Mongers and Their Methods* (1920); idem, *A Magician among the Spirits* (1924).

[57] Houdini, *Houdini Exposes the Tricks Used by the Boston Medium "Margery" to Win the $2500 Price Offered by the Scientific American*. See also the full review of the Margery case written for the *American Journal of Psychology* in 1926: Walter Franklin Prince, 'A Review of the Margery Case'.

[58] For the statements of the committee, including Bird's positive review of the case, see Bird (ed.), *The Margery Mediumship*. The relative value of the promised prize money comes to $ 434,000 by 2011 standards, if we are assessing the relative economic power of the money. Calculated using measuringworth.com.

[59] See, e.g., John Beloff, *Parapsychology*, 111. We shall discuss the circumstances of this historically very significant case in more detail in the coming chapters.

might add, the reductionist equally abhorred mysteries of *this* world (such as otherwise unknown vitalistic principles, or unsupportable claims about brain-waves) as the mysteries of another. It is particularly in the meeting between the negative reductionist strategy and the other purportedly naturalised explanations of psychic phenomena that psychical research became a veritable battle over the boundaries of natural knowledge. It was here, moreover, that the boundary between enchantment and disenchantment was truly drawn.

4 Conclusion: Anti-Agnosticism and the Slippery Road to Psychic Enchantments

One wonders whether Myers, when he accused sundry modern believers of insulating their cherished beliefs from the realm of science and empirical enquiry, saw all the possible implications of his daring proposal. Having looked in some detail at the precise meaning of Huxley's original formulation of agnosticism at the opening of this chapter, and then seen what psychical researchers generally attacked when they lashed out at "agnostics", it is tempting to conclude that he did not. The anti-agnosticism of psychical research took issue with certain epistemological distinctions that presumed to set forth what can and cannot be known through empirical investigation. The agnosticism they attacked was inseparable from the *sceptical* dimensions of disenchantment, as analysed in chapter one: the strict boundary drawn between the domain of science and the domains of *values* and *metaphysics*, which led Weber to call for an intellectual sacrifice on behalf of the modern religious believer. When it comes to the *optimistic* dimension of disenchantment (concerning the dissipation of mystery and possibility of exact knowledge), one has to say that psychical researchers not only kept it more or less intact, but *expanded* its scope. Complete knowledge of this world is possible, and this world contains many things that have hitherto been considered mysteries, but are now at long last put under the careful scrutiny of science. The discipline's anti-agnosticism, construed as an open-ended naturalism, refused the intellectual sacrifice by claiming that nature was broader and richer than previously thought. Rational knowledge could thus be gained about realities which had previously been considered either non-existent, or else completely distinct from this world. By extension, science could reach beyond the phenomenal (thus entering metaphysics), and ultimately beyond the strictly factual (crouching in on axiology).

Psychical research, in short, meant a refusal to do natural philosophy along the disenchanted lines of Kantian epistemology. The call for a naturalisation of the supernatural is in this sense also a naturalisation of the problem of disenchantment itself: the very borders that were thought to separate this world from higher worlds were themselves opened up for scientific investigation. Perhaps the worlds were not separate at all, or perhaps, as Myers seemed to suggest, humanity already possessed or was in the process of developing perceptual organs and faculties of thought that made it possible to pierce the veil of this world and see lucidly in higher realms. At any rate, the boundaries of knowledge could not be drawn *a priori*. They could only be established by empirical investigation.

There are two ironies about this approach. The first of these was already hinted to above: expanding scientific knowledge to penetrate those realms that had previously been isolated by an impenetrable epistemological boundary would, if successful, mean that more "mysterious forces" were explained and tamed. Nature may have been opened up, but if psychical research should succeed to create explanatory frameworks that told the scientific community how all the exotic occult phenomena truly worked, it would be no less "disenchanted". This conclusion could, however, be challenged, depending on which kind of naturalisation strategy was opted for. If the final explanation of psychic phenomena would be in terms of irreducible vitalistic forces, setting things in motion and driving evolution towards new and unknown territories, that would be a decidedly more "enchanted" explanatory framework than one produced by positive reductionist strategies referring to "fluids", "fields", "waves", or "rays".

A second and more serious irony is that the anti-agnosticism of Myers was, in reality, not all that far away from Huxley's original *agnosticism*. Huxley's agnostic position had *also* argued the naturalisation of most things supernatural – it had just been a different *kind* of naturalisation than the one Myers and colleagues wanted to pursue. The Huxleyan agnostic was a naturalistic doubter; a fierce sceptic, a critic of all claims that could be given a factual interpretation, accepting no authority except that of nature and the store of natural knowledge. Calling the heavens down to earth did not mean instant enchantment: it was welcomed by an army of naturalistic doubters, armed to the teeth with diagnostic manuals and magicians' books of tricks. The point is this: while it seemed to Myers and the psychical researchers that no religious options in the modern world could overlook and ignore the authority of science, the fearless call for

empiricism also led to an open confrontation with contrary evidence. Breaching the border between science and religion means that religious claims must be open for disconfirmation in the exact same way as any other claim not graced with the cloak of sanctity and thus left untouchable.

The road to psychic enchantments was thus a slippery one. A close dialogue with the empirical sciences was necessary if anything of the sort was to be established in the first place, but this manoeuvre simultaneously left a flank wide open for well-prepared attacks. The very philosophical assumptions that were necessary for the project to get started contained within themselves the seeds of its future antagonisms. This has remained a central paradox in the history of psychical research ever since.

8

Laboratories of Enchantment
Parapsychology in Search of a Paradigm

> A collection of facts is not yet a science any more than a heap of stones is an edifice. They must be collated, sifted and ordered, according to a definite point of view, in order that we may draw conclusions from them.
>
> Baron Albert von Schrenck-Notzing, *Phenomena of Materialisation* (1923), 28.

INTRODUCTION: THREE GENERATIONS OF PSYCHICAL RESEARCH

Psychical research's struggle to become a respected scientific discipline may be told as the history of three consecutive generations of researchers, facing different challenges and situations: the founding first generation (active ca. 1870 to 1900), the second generation (ca. 1900-1930), and the third generation (ca. 1930-1960s). This periodization marks some major points of transition in the history of psychical research programmes, and their relation to wider society. Thus, the first generation saw the establishment of the field by a network of Cambridge friends, and ended with the death of the core members of this network around the year 1900. The second generation, which will occupy us at length in the present chapter, was troubled by schisms and disagreements following the passing of those who had previously knit the field together and ensured its stability. This generation was characterised by conflicting attempts to establish a paradigm for the study of psychic phenomena. It was only with the third generation, the inception of which may conveniently be dated to the beginning of the 1930s, that such a paradigm was more or less successfully established. While the paradigm which took shape at the beginning of the 1930s is pretty much still in place in parapsychological communities today, we may date the end of the third generation to the 1960s, when the field opened up to new alliances and cultural constellations in Cold War America. That story is, however, beyond the scope of the present work, which only

considers developments up until the beginning of the Second World War. I will focus on the second generation in particular (ca. 1900-1930), its search for a proper paradigm, and the associated struggles for authority in the field. The search for a paradigm is the logical next step from the questions that concerned us in the previous chapter: once one has established that a science of the "supernormal" is both possible and desirable, and that "agnosticism" concerning such phenomena is premature, a new set of questions arise: just *how* should one go about studying the supernormal? What are the appropriate methodologies? How do these relate to the widely differing first assumptions in the field? This chapter provides a detailed look at how these questions have been answered. We shall see that the main challenge encountered by the prospective "laboratories of enchantment" has been to negotiate between *qualitative* and *quantitative* research methods. I will suggest that the major conflicts in the field arise from the tension between these two strands of research, and the basic hypotheses that have typically accompanied them.

* * *

The three generations faced different historical challenges, and each new one built upon the successes and failures of the previous. Accordingly, the debates of the second generation cannot be properly understood without reference to a broader historical framework.

The first generation of psychical researchers formulated the goals and agendas for their prospective discipline, calling for a naturalisation of the supernatural. They pioneered methods for researching "supernormal" phenomena, they collected data both of an ethnographic and historical character, and explored theoretical frameworks. They also created the first *institutions* for organising, conducting, and promoting such research, of which the English Society for Psychical Research (1882) was without doubt the most important one. In Britain, where the project was at its strongest, the first generation is notable for its *social status*: psychical research was an elite phenomenon, initiated and run by renowned academics, members of high society, and the

intelligentia.[1] There were even notable links to the political establishment, especially through the influential Balfour family.

The social status of the members involved with the project is significant, for it was no doubt part of the reason why the SPR was relatively successful during the first two decades of its existence. Thus it is also intriguing to note that the demise of the most notable and respected spokespersons of the field during the first decade of the 20th century, including Henry Sidgwick (died 1900), Frederic Myers (1901), and William James (1910), was also the beginning of the end to the social capital that had been built up by the society. In the first two decades of the new century, the SPR became associated with the spiritualist leanings of Oliver Lodge rather than the careful philosophical criticism of Sidgwick, or the psychological discourse of Myers and James. Although Lodge had originally been one of the intellectual beacons of the society in the 1880s and 1890s, and a leading physicist of his generation, his drifting towards the spiritualistic lecture circuit and steadfast adherence to ether metaphysics made him look increasingly cranky in the eyes of established academic communities. His ideas were, however, still widely received by the general population, and he was no doubt seen by these readers as a spokesman of legitimate science. Nevertheless, the status of the field was changing from that of a late-Victorian gentlemanly intellectual pursuit, to a topic of broad popular appeal.

A number of popularising writers contributed to this trend. One prominent example is the journalist and member of the American SPR, Hereward Carrington (1880–1958), who authored more than one hundred books, primarily on psychical research, spiritualism, magic and magical traditions, and occult phenomena such as astral projection.[2] By the 1920s, those who presumed to know something about psychical research were quite likely to have their knowledge from Carrington's writings.

[1] Cf. ibid., 643-644; Gauld, *Founders of Psychical Research*.

[2] Relevant titles include Carrington, *The Physical Phenomena of Spiritualism* (1907); *Eusapia Palladino and Her Phenomena* (1909); *Personal Experiences in Spiritualism* (1913); *The Problems of Psychical Research* (1914); *True Ghost Stories* (1915); *Psychical Phenomena and the War* (1918); *Modern Psychical Phenomena* (1919); Carrington with Sylvan Muldoon, *The Projection of the Astral Body* (1929), and so forth.

In fact, his popularisations went far beyond the American and British markets, some of his books being translated into languages such as Japanese and Arabic.[3]

When it comes to actual research, the second generation was characterised by fragmentation and strife. Despite their successes in making psychical research socially acceptable for academics, the first generation had still failed to agree upon a theoretical framework that rendered the ostensible phenomena intelligible. Even the empirical foundation of the field had been too weak to convince the sceptics that further research was needed. This left a difficult situation for the second generation, which not only had to continue convincing sceptics, but lacked a secure ground upon which they could build their case. Psychical research between 1900 and 1930 was characterised by *conceptual*, *theoretical*, and *methodological* fragmentation. A number of different schools and research groups existed in countries such as the UK, the US, the Netherlands, Germany, and France, but there was no general agreement on how to conduct research, how to relate and interpret data, or even on what ought to be considered as proper data for the discipline in the first place. To borrow a concept from the history and philosophy of science, the second generation was torn between a number of different and diverging psychical *research programmes*, the scientific rigour of which varied considerably.[4] Some of these programmes were university sponsored, most were the initiatives of private patrons, while others were direct outshoots of the spiritualist movement. Sometimes these boundaries were blurred entirely. Indeed, another point of disagreement was whether or not the scientific path was worth following in the first place.

Focusing on the second generation, this chapter describes a situation in which a number of competing "laboratories of enchantment" were attempting to establish a proper science of the supernormal. The main focus is on the schools' respective take on proper scientific conduct – that is, on their actual laboratory *practice*. My main argument is that second-generation psychical research can be characterised as a "pre-paradigmatic science", and the researchers involved in it as a generation of would-be scientists in search of a paradigm. With "paradigm" I am thinking of the most specific of

[3] See the publisher's note in Carrington, *True Ghost Stories*, 7.

[4] The technical sense of scientific "research programmes" was developed in Lakatos, 'Falsification and the Methodology of Scientific Research Programmes'. Compare this with my discussion of Thomas Kuhn's concept of "paradigm" below.

the many senses in which the term has been used since the publication of Thomas Kuhn's *Structure of Scientific Revolutions* (1962), namely, as a "shared example" from which scientists in a given discipline are able to perform "normal science" in accordance with specific standards of rationality that are encoded in a common "practice" rather than "laws".[5] As Kuhn emphasised, such paradigms are often embodied in ground-breaking textbooks, such as Newton's *Principia*, or in a specific series of experiments and papers, such as Maxwell's work on electromagnetism.[6] It is through the shared acceptance of *exempla* of this type that a given special science can become mature and, as it were, "progressive". It is, I argue, precisely the *lack* of such a unifying *exemplum* that characterises psychical research in the second generation. We shall see that a number of works *tried* to put psychical research on a firm methodological footing, often backed up with an arsenal of neologisms to denote the field and its effects, and with theoretical frameworks for understanding the phenomena in question. However, no broad consensus was ever reached. Instead we see decades of competition and quarrels between sometimes widely different and even incompatible approaches. It is this diversity that shall occupy us at present: the search for paradigms and the social and discursive battles to enforce them.

A main fault line will be drawn between *qualitative* and *quantitative methodologies*, representing two separate lines of inquiry, favoured by different branches of psychical research throughout the period. Broadly defined, qualitative approaches focus on the close study of single cases, evaluating the minutia of a séance, or the details of a given "anomaly". By contrast, quantitative approaches are concerned with statistical relationships, probabilities, and the design of repeatable experiments. As

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[5] Kuhn's important book was a bit too liberal with its use of the term "paradigm". In an early criticism, Margaret Masterman counted as many as twenty-one different uses of the term in *Structures*, listing them all before suggesting, as a good analytic philosopher, that they could be subsumed to a total of three general types: metaphysical paradigms, sociological paradigms, and the exemplar type that I am adopting here. Kuhn himself, responding to critics in the 1969 postscript to the second edition, conceded that there were primarily *two* main types of paradigms: 1) 'the entire constellation of beliefs, values, techniques, and so on shared by the members of a given community'; and 2) 'the concrete puzzle-solutions which, employed as models or examples, can replace explicit rules as a basis for the solution of the remaining puzzles of normal science'. Again, it is in this latter, restricted sense I am using the term at present. See Masterman, 'The Nature of a Paradigm', 61-65; Kuhn, 'Postscript – 1969', 175.

[6] Kuhn, 'Postscript – 1969', 187-193.

we shall see later, quantitative and qualitative approaches to psychical phenomena were typically separated by different explanatory hypotheses as well: for example, the spiritualist and animist strategies that we discussed in the previous chapter were usually (although not exclusively) connected to *qualitative* research practices, while the "positive" reductionist ones proved more compatible with *quantitative* methods. In short, research communities were divided on a great number of initial hypotheses and theoretical assumptions: are psychic phenomena common or rare? Do they have a biological basis, or are they due to the activity of actual, disembodied spirits? Can they be produced at will, or do they only occur spontaneously? How one answered these questions would have great implication for the adoption of methodology, and they became the foundation for increasingly polemical battles about the proper conduct of psychical research.

* * *

This chapter, then, presents an "internalist" narrative of the fragmentation of psychical research in terms of what might be called its "rational component".[7] The reader should be warned that it is largely a history of failures: the very struggle to find rational common ground for the discipline led to a long series of bitter conflicts, schisms, and disappointments. I will start by assessing the failure of the first generation, told particularly through the witness of William James. The story then continues to a thorough assessment of the scientific conditions prevailing in the second generation.

This chapter's internalist analysis will be complemented in the following chapter by an *externalist* consideration of the social, cultural, and political contexts of psychical research during the inter-war period. Despite the frustration, fragmentation, and highly elusive rational foundations of the field, a paradigm for psychical research *did* finally emerge in the beginning of the 1930s. This event ushered in the *third* generation – a

[7] Here I make a separation between "internalist" and "externalist" aspects of scientific development, and describe the internal aspects as composing the "rational component" of a given discipline. It refers to the cluster of issues often discussed in the philosophy of science as part of science's special "rationality", which is thought to demarcate science from non-science in a philosophical sense. Thus, principles of verification and falsification, the logic of discovery and justification, methodological issues related to inferences to the best explanation, or questions bearing on experimentation, such as the use of controls, randomization, single and double blinds, repeatability, statistics and probability analyses, properly belong to an internalist analysis.

generation which could, for the first time in the field's history, consider themselves true *professionals*, trained in universities and working under the disciplinary banner of "parapsychology". This sudden development suggests that internalism alone is not enough to determine the success or failure of a scientific discipline: external factors (social, political, economic) must also be taken into account. But to appreciate the exact role and importance of external factors, it is necessary to first know something about the "rational" situation of the discipline. Thus, the present chapter also sets the stage for the next one, in which we shall explore the emergence of a paradigmatic science in the third generation.

1 William James and the Failure of the First Generation

Between the foundation of the SPR in 1882 and the year 1900, about 14,000 pages of research reports, theorising, and experimental notes were published in the society's journal, proceedings, and reports.[8] About half of these pages were written by the small group of people at the core of the society, essentially Henry and Eleanor Sidgwick, Richard Hodgson, Edmund Gurney, and Frederic Myers.[9] With the exception of Eleanor Sidgwick (1845–1936; née Balfour – the sister of Arthur), they were all dead by 1905. When this highly influential and productive network of old Cambridge friends collapsed, the SPR was left without a clear direction. Considering that the heritage they left behind was also highly ambiguous at best, as far as one considers any actual progress in the endeavour they had defined, this was no small challenge.

William James' testimony from 1909, given just one year before he too deserted the ranks of the living, illustrates the situation at the demise of the first generation. Reflecting on the role of the "Sidgwick group", and their fortunes and results in psychical research, James testified to a feeling of failure:

> These men [the founders of the SPR] hoped that if the material were treated rigorously, and, as far as possible, experimentally, objective truth would be elicited, and the subject rescued from sentimentalism on the one side and dogmatizing ignorance on the other. Like all founders, Sidgwick hoped for a certain promptitude of result; and I heard him say, the year

[8] Especially Gurney et al., *Phantasms of the Living*, and Myers, *Human Personality*.

[9] See Gauld, *Founders of Psychical Research*, 313.

> before his death, that if anyone had told him at the outset that after twenty years he would be in the same identical state of doubt and balance that he started with, he would have deemed the prophecy incredible. It appeared impossible that that amount of handling evidence should bring so little finality of decision.[10]

James, who had been the main intellectual proponent of psychical research in the United States, shared Sidgwick's disappointment:

> My own experience has been similar to Sidgwick's. For twenty-five years I have been in touch with the literature of psychical research, and have had acquaintance with numerous "researchers". I have also spent a good many hours (though far fewer than I ought to have spent) in witnessing (or trying to witness) phenomena. Yet I am theoretically no "further" than I was at the beginning; and I confess that at times I have been tempted to believe that the Creator has eternally intended this department of nature to remain *baffling*, to prompt our curiosities and hopes and suspicions all in equal measure, so that, although ghosts and clairvoyances, and raps and messages from spirits, are always seeming to exist and can never be fully explained away, they also can never be susceptible of full corroboration.[11]

This quotation contains the essence of the situation of psychical research at the beginning of the 20th century. It expresses the futility felt by those sincere and thorough researchers who had invested most in the project thus far. But it also betrayed an underlying conviction that the evidence *ought* to be there regardless, that the phenomena – or some of them at least – were genuine even if the quest to prove so had turned out frustratingly elusive. In what was to be his last reflections as a psychical researcher, James confessed that he did indeed hold some of the phenomena to be genuine, and attributed quite a lot of significance to the fact.[12] In particular, James expressed how psychical research, through evidence such as the personalities emerging in automatic writing and mediumistic phenomena, led him to adopt a psychological and metaphysical position that was, in essence, identical to Frederic Myers':

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[10] James, 'Final Impressions of a Psychical Researcher', 174.

[11] Ibid., 174-175.

[12] 'The next thing I wish to go on record for is *the presence*, in the midst of all the humbug, *of really supernormal knowledge*. By this I mean knowledge that cannot be traced to the ordinary sources of information – the senses, namely, of the automatist.' Ibid., 200.

> Out of my experience, such as it is (and it is limited enough) one fixed conclusion dogmatically emerges, and that is this, that we with our lives are like islands in the sea, or like trees in the forest. The maple and the pine may whisper to each other with their leaves, and Conanicut and Newport hear each other's foghorns. Just so there is a continuum of cosmic consciousness, against which our individuality builds but accidental fences, and into which our several minds plunge as into a mother-sea or reservoir. Our "normal" consciousness is circumscribed for adaptation to our external earthly environment, but the fence is weak in spots, and fitful influences from beyond leak in, showing the otherwise unverifiable common connection. Not only psychic research, but metaphysical philosophy, and speculative biology are led in their own ways to look with favour on some such "panpsychic" view of the universe as this.

It was, James argued, in this "panpsychic" framework that the most intriguing questions about consciousness ought to be asked, and he therefore urged that the whole field of investigation become eponymous with Myers:

> Assuming this common reservoir of consciousness to exist, this bank upon which we all draw, and in which so many of earth's memories must in some way be stored, or mediums would not get at them as they do, the question is, What is its own structure? What is its inner topography? This question, first squarely formulated by Myers, deserves to be called "Myers' problem" by scientific men hereafter. What are the conditions of individuation or insulation in this mother-sea? To what tracts, to what active systems functioning separately in it, do personalities correspond? Are individual "spirits" constituted there? How numerous, and of how many hierarchic orders may these then be? How permanent? How transient? And how confluent with one another may they become?[13]

Looking at these questions through the lens of psychical research would lead one close to a new worldview along the lines of psychic enchantment, in which the whole cosmos is understood through fundamental psychical and spiritual realities:

> What again, are the relations between the cosmic consciousness and matter? Are there subtler forms of matter which upon occasion may enter into functional connection with the individuations in the psychic sea, and then, and then only, show themselves? – So that our

[13] Ibid., 204-205.

> ordinary human experience, on its material as well as on its mental side, would appear to be only an extract from the larger psychophysical world?[14]

While these were all phrased as questions, there is no doubt that James considered them as suggestive of what might one day become established knowledge. Despite his open confession of disappointment in the results and progress of psychical research in its first generation, James ended his essay on a positive note, which, once again, urged one not surrender to dogmatic agnosticism but continue to push further into the unknown:

> Vast, indeed, and difficult is the inquirer's prospect here, and the most significant data for his purpose will probably be just these dingy little mediumistic facts which the Huxleyan minds of our time find so unworthy of their attention. But when was not the science of the future stirred to its conquering activities by the little rebellious exceptions to the science of the present? Hardly, as yet, has the surface of the facts called "psychic" begun to be scratched for scientific purposes. It is through following these facts, I am persuaded, that the greatest scientific conquests of the coming generation will be achieved.[15]

Despite the problems, the hope of a future science remained. It is intriguing that James placed the hopes of that future science with the phenomena of *mediumism*, rather than the more strictly *quantifiable* trials that had been run with alleged "psychics", guessing playing cards and describing objects at a distance. This emphasis on the *qualitative* study of spiritualistic events in place of the quantitative study of isolated and well-defined "supernormal" faculties did become a vogue in the psychical research societies in the decades following James' death. However, the verdict of history must be that this was not the "progressive" line that the first generation had longed for.

With the hindsight of history, James' view of the future of psychology at large was quite different from the direction it would eventually take, and it all connects up to psychical research and particularly the place of Myers. As James had written in his obituary of Myers, published in the SPR *Journal* in 1901, he found it very probable 'that Frederic Myers will always be remembered in psychology as the pioneer who staked out

[14] Ibid., 205-206.

[15] Ibid., 206.

a vast tract of mental wilderness and planted the flag of genuine science upon it.'[16] More than a century later it is clear that this prediction failed, and James himself (or at the very least a sanitised version of his thinking) has, in part, taken the slot in history that had been reserved for Myers. The reasons for this fate can be better understood by looking at the development of psychical research in the second generation.

2 The Fragmentation of Psychical Research: The Second Generation

As mentioned, the second generation of psychical researchers were left without a clear paradigm for pursuing their work. Instead, a number of diverging schools were founded, and competing research projects vied for authority over things supernormal. In a paper on 'Psychical Research and Philosophy' read in 1926, Hans Driesch, then one of the leading intellectual figures in the field and the president of the SPR, observed the fragmentation of psychical research:

> All so-called sciences, the word taken in the widest sense, are branches of philosophy which live, as it were, an independent life. Psychical Research is one of these branches, or, rather, the word "Psychical Research" or "Para- or Meta-psychology" – to introduce the terms used in Germany and France – denotes *several* branches of philosophy that have become independent to a certain extent. For at the first glance at least, there is not one Parapsychology but there are several Parapsychologies, which may one day unite into one, there being several groups of psychic phenomena which, at first in any case, are as different from one another as, e.g., chemistry is from optics.[17]

Driesch's focus here was on the heterogeneous status of the phenomena themselves; they seemed to belong to a number of different classes and categories, not necessarily subsumable to one and the same science. It is indeed a serious problem for an aspiring science to not be able to agree with itself on what kinds of phenomena it is supposed to study. This is a key characteristic of a non- or pre-paradigmatic science. It was, however, only one of a series of problems splitting the psychical research communities. The conference in which Driesch's statement was read was dedicated to an even more

[16] James, 'Frederic Myers' Service to Psychology', 170.

[17] Driesch, 'Psychical Research and Philosophy', 161.

serious problem: disagreements about the very *genuineness* of the phenomena that psychical research took as its objects of study.

The general fragmentation of psychical research is illustrated clearly by the symposium held at Clark University in November–December 1926.[18] The concept for the symposium, collaboratively designed by William McDougall, Harry Houdini, and the psychologist Carl Murchison, was to convene spokespersons of opposing views within the field in order to bring the fundamental question of the "genuineness" of psychic phenomena into focus. Houdini, the arch sceptic of the period, and McDougall, a critical and scientifically-minded supporter of psychical research, although the best of friends, had their obvious disagreements concerning the issue, and it was clear to the three conveners that this disagreement was reflected in the field of psychical research at large.[19] The idea for the conference was precisely to bring the fundamental tensions in the field to the fore.

The proceedings, published as *The Case for and Against Psychical Belief* (1927), presents fourteen essays distributed in four categories: those 'Convinced of the Multiplicity of Psychical Phenomena', those 'Convinced of the Rarity of Genuine Psychical Phenomena', researchers 'Unconvinced as Yet', and finally, those 'Antagonistic to the Claims That Such Phenomena Occur'. Houdini, whose untimely death had prevented him from actually participating in the conference, clearly belonged in the latter category, together with the sceptical psychologist Joseph Jastrow, author of such books as *Fact and Fable in Psychology* (1900) and *The Psychology of Conviction* (1918), and, as we saw in the previous chapter, a pioneer of the "psychology of the occult".[20] McDougall took the position of someone who was convinced of the *rarity* of genuine psychical phenomena, and was joined by Driesch, the Boston psychical researcher and Episcopal minister Walter Franklin Prince (1863–1934), and the pragmatist philosopher F. C. S. Schiller (1864–1937). The group of the "convinced" was unsurprisingly dominated by spiritualists, such as the author Arthur Conan Doyle and the physician Le Roi Crandon – husband to the famous medium "Margery" (Mina Crandon). A paper by Oliver Lodge was included in this camp as well, representing a

[18] The papers read, and a couple of additional pieces, were published in 1927 by Murchison (ed.), *The Case for and against Psychical Belief*.

[19] Murchison, 'Preface', vii.

[20] See discussion in the previous chapter.

pro-spiritualist view coming from within organised psychical research. The "unconvinced as yet" were two psychologists: Stanford's John Edgar Coover (1872–1938), and Gardner Murphy (1895–1979), then working at Columbia University.

As we shall see later in this chapter, Coover and Murphy had both conducted important research into telepathy and clairvoyance in the decades prior to the conference, and were astute experimentalists. The fact that both of these experimentalists were in the group of the unconvinced reflects another of the problems of psychical research during the period: the conflict concerning methodologies for research. It is not a coincidence that the "convinced" group was dominated by those who advocated *qualitative* methodologies, based largely on the observation of mediums during séances, or at best the testing against external evidence of "psychic" information that could only be obtained in such situations.[21] These correlations point to a basic and suggestive bifurcation that we shall return to shortly. First, however, we should take note of the middle category of those who were convinced of the *rarity* of genuine phenomena. This category is important, for here we find a class of researchers who claimed to value the scientific method just as much as the unconvinced experimentalist, yet still thought that *some* phenomena were genuine, while others were not. It is notable, though, that the men in this class – McDougall, Driesch, Prince, and Schiller – had minimal experience with actual experimental work in the field. Nevertheless, I will argue in the next chapter that the professionalization of parapsychology emerged precisely from this class, although due to reasons that may be characterised as "political" rather than strictly scientific.

At present, the relative strengths of what I have called "qualitative" and "quantitative" methodologies in psychical research must be assessed. We should start by focusing on the qualitative ones, which were particularly dominant in the SPR and its daughter and sister movements in Europe and the United States. The scope is thus international. Each group must be situated in their respective local and institutional

[21] Another spokesperson for the convinced was Frederick Bligh Bond, most famous for his invention of psychic archaeology. Bligh Bond explained in his paper that he considered 'Proof from Buried Antiquities' to be one of the stronger forms of evidence that could be sought in corroboration of knowledge claimed by "supernormal" means. His own excavation of Glastonbury Abbey in 1907 had been carried out precisely on these grounds. Bligh Bond, 'The Pragmatist in Psychic Research', 38-48. For Bligh Bond's account of the Glastonbury excavation, see his *The Gate of Remembrance*.

contexts, while also drawing attention to the international connections between them. Above all, however, attention will be drawn to the "rational", "science-internal" aspect of each of these schools. That is: how did they situate their researches vis-à-vis the established sciences? What were the theoretical frameworks in which they proposed to view, interpret, and explain the phenomena they studied? What were the methodological assumptions informing their research, and how did these influence the adopted methods? When the socio-cultural and the methodological aspects of psychical research are assessed together we start to see how a "progressive", pro-science, and pro-professionalisation trend in psychical research began to emerge, positioned in opposition to a "pro-spiritualist", qualitative, and mostly medium-focused research tradition.

THE SPR AND THE GHOSTLY RETURN OF FREDERIC MYERS

The first generation of psychical researchers had succeeded in establishing a large network which spanned a number of countries and was sustained by durable institutions and periodicals. In the second generation, many local branches of the SPR continued to do psychical research in much the same manner as before, with a continued interest in mediums and spiritualism. The outcome of these researches were recorded and published in *Journal* and *Proceedings* of the Society. In addition to these outlets, members of the SPR prolifically published books and pamphlets for popular audiences. While most of these publications were apologetic defences of psychical research and expositions of its programme, other publications gave accounts of new research conducted by the Society and its associates. Examples of the latter include Hereward Carrington's publications of sittings with the medium Eusapia Palladino,[22] and his collections of articles in works such as *Modern Psychical Phenomena* (1919), and *The Problems of Psychical Research* (1921). These reports tended to go much further than Carrington's more sober colleagues, as he wrote supportively about controversial fields such as "spirit photography", the instrumental measurement and weighing of spirits by physical apparatus, and even experiments in astral projection – complete with

[22] E.g. Carrington, *Eusapia Palladino and Her Phenomena* (1909); idem, *Personal Experiences in Spiritualism* (1913).

photographs of astral bodies in flight (see figure 10 below).[23] Meanwhile, other lines of psychical research were published and popularised by members, including work on dowsing as a form of clairvoyance, and the entirely new field of "psychic archaeology".[24]

I will not spend too much time on the details of these continued efforts of the SPR, but some important general trends should be mentioned. The continued reliance on mediums is particularly notable, especially in light of the problematic relation to spiritualism and the spiritualist hypothesis. From the 1920s, these became the focus of a growing internal disagreement concerning the very idea of aligning psychical research with scientific method. As seen already, the spiritualist hypothesis was experiencing a revival in psychical research in the early decades of the century. An *external* reason for this revival was the Great War and the general upsurge in spiritualism that followed in its wake. However, a reappreciation of the spiritualist hypothesis is already noticeable among psychical researchers in the decades *before* the Great War. For example, Oliver Lodge had started considering it seriously already in his presidential address to the SPR in 1902, and was followed by William Barrett's address two year later.[25] In his 1908 *Immortality of the Soul*, which mostly addressed the compatibility of science and Christian notions of the soul, Lodge enlisted the seeming ability of some mediums to 'respond to a psychical agency apparently related to the surviving portion of

[23] All of these topics are included in Carrington, *Modern Psychical Phenomena*, a book aiming to 'outline a few of the many relationships and bearings of psychical phenomena upon science and our thought', and describing 'some of the newer researches and speculations in this fascinating field'. Carrington, *Modern Psychical Phenomena*, x-xi.

[24] A major work on dowsing in the context of the SPR was published by the early member and former president of the society, physicist William Barrett, together with Theodore Besterman, as *The Divining Rod: An Experimental and Psychological Investigation* (1926). The foundational work of psychic archaeology was Frederick Bligh Bond's *The Gate of Remembrance*, which first appeared in 1918. The book was based on psychical investigations going back to the excavations at Glastonbury Abbey a decade earlier. It was published with a prefatory note by William Barrett, who gave his endorsement and testimony to Bligh Bond's sincerity, and the trustworthiness of his character. Significantly, Barrett implored the reader to recognise the courage shown by the author in publishing a work 'which might possibly jeopardise the high reputation he enjoys' (x).

[25] Lodge, 'Presidential Address, March 1902'; Barrett, 'Presidential Address, January 29th 1904'. See my discussion of Lodge's ether metaphysics in chapter six.

intelligences now discarnate' as part of a case in favour of immortality.[26] The year after, in 1909, he published a broader survey of psychical research with the suggestive title *The Survival of Man*. In the concluding section of this book Lodge, made it clear that he thought it 'the best working hypothesis at the present time … to grant that lucid moments of intercourse with deceased persons may in the best cases supervene'.[27] Thus, the external factor of the Great War seems to have been merely an extra catalyst acting on an already existing tendency to reconsider the hypothesis of survival as a serious possibility.

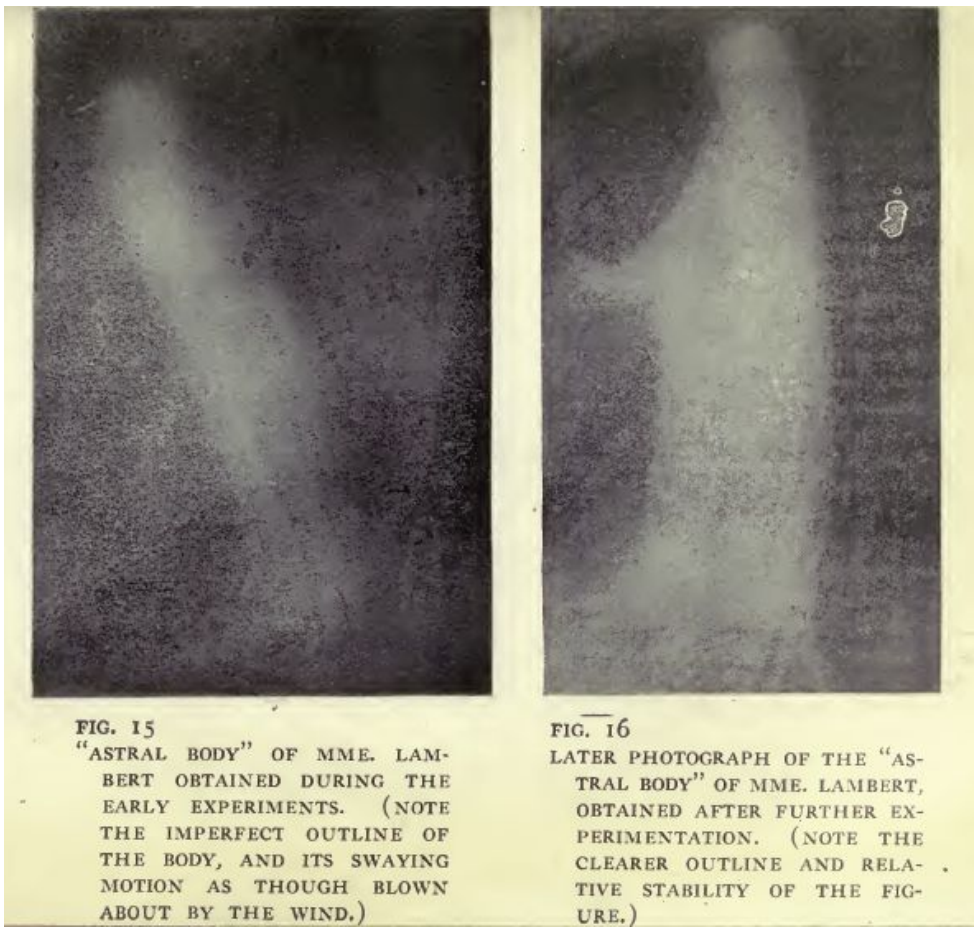


FIG. 15
"ASTRAL BODY" OF MME. LAMBERT OBTAINED DURING THE EARLY EXPERIMENTS. (NOTE THE IMPERFECT OUTLINE OF THE BODY, AND ITS SWAYING MOTION AS THOUGH BLOWN ABOUT BY THE WIND.)

FIG. 16
LATER PHOTOGRAPH OF THE "ASTRAL BODY" OF MME. LAMBERT, OBTAINED AFTER FURTHER EXPERIMENTATION. (NOTE THE CLEARER OUTLINE AND RELATIVE STABILITY OF THE FIGURE.)

Figure 10: Photographic impressions of a projected astral body, with Carrington's explanations. Reproduced from Carrington, *Modern Psychical Phenomena*, 147.

[26] Lodge, *The Immortality of the Soul*, 72-73. Note, however, that he also voiced serious reservation about accepting such claims prematurely.

[27] Lodge, *The Survival of Man*, 337.

What, then, were the *internal* reasons to reconsider the spiritualist hypothesis? On the one hand, the re-evaluation of survival was connected with the failure of the mechanistic models of telepathy and clairvoyance that had been explored in the 1880s and 1890s, which had served as the guiding hypothesis of Gurney, Myers and Podmore's monumental *Phantasms of the Living* (1886). On the other hand, the return of spiritualism was facilitated by the final formulation and publication of an entirely new, essentially "romantic" way of theorising psychical phenomena in the work of Frederic Myers. Myers' perspective, which James fittingly had dubbed not only a "romantic" but also a "*gothic*" psychology,[28] had been familiar to regular readers of the SPR's *Journal* and *Proceedings*, but it was only as late as 1902 that his full-blown theory became generally available in the two-volume tome *Human Personality*. Myers' gothic psychology thus provided a unique framework for understanding and rehabilitating the spiritualist hypothesis in the decades following the publication of his work.

The influence of Myers in this development would, however, also take a quite different and "supernormal" form. In what must be one of the stranger anecdotes in the history of psychology, William James was with his friend Myers at James Baldwin's sanatorium in Rome the winter when the latter died. The two men had agreed on a pact that whoever would be the first to cross the threshold of death should return to the other with a message from the metetherial realm.[29] On January 17, 1901, it became clear that Myers would be the pioneer, and James his chronicler. According to an eyewitness, Dr Axel Munthe, who had treated Myers for the respiratory problems he was suffering, James got seated by Myers' deathbed when the moment was drawing near, with a notebook open in his lap and a pen in hand, ready to record the message.[30] Nothing happened that day, but the silence did not last for long. At the end of February, the famous Boston medium Leonora Piper was transmitting messages claiming to come from Myers' spirit to Richard Hodgson, one of the few members of the Sidgwick circles still alive. The spirit announced to his old colleague that he had established 'a society on this side of life for further pursuance of the … Psychical work', and complained about

[28] James, 'Frederic Myers' Service to Psychology'.

[29] See the reconstruction of these events in Luckhurst, *Invention of Telepathy*, 253-254.

[30] The episode is recorded in the doctor's autobiography, Munthe, *The Story of San Michele*, 370-372. Cf. Luckhurst, *Invention of Telepathy*, 254.

the difficulties of communicating properly from the other side.[31] That same winter, on February 19, 1901, Oliver Lodge and his wife were sitting with the medium Mrs Thompson in Birmingham, when, after dinner, "Myers" took over for Thompson's regular control, "Nelly".[32] Thompson's take on Myers was eager to name-drop other deceased researchers, and, like Piper's, preoccupied with the difficulties of communicating from the other side. 'Lodge, it is not as easy as I though in my impatience', Myers exclaimed when he first appeared, but added that 'Gurney says I am getting on first rate'.[33] His quarrels with Henry Sidgwick about the genuineness of spirit communications apparently continued on the other side, too: 'I want to convince Sidgwick. He says "Myers, now we are together, you convince me that I am sending my messages, and that she is not getting them from us some way." He wants me to show him.'[34] Although he seemed to have forgotten, when asked, about the existence of the SPR in the world of the living, he appeared just as committed to its project in the world of the dead.

Thompson had known Myers and his circle very well in real life, which, Lodge carefully noted, meant that 'no evidential importance can be attached' to remarks about personal details and friendships.[35] While the communication from Myers could thus not be taken as 'strictly evidential', Lodge still held that it had been 'as convincing as anything that could be imagined of that kind'.[36] That opinion was, however, not shared by the chief investigator across the Atlantic. As Roger Luckhurst has observed, the surviving notes and manuscripts from Hodgson's early séances with Piper's Myers control bear the signs of frustration and even anger on the part of the researcher. Hodgson had always been among the more sceptical of the SPR researchers, and when the medium confronted him with what she claimed to be the spirit of an old friend and master he was not easily impressed. Hodgson complained about the banality and lack of

[31] Cited in ibid. The original manuscripts are kept in the Myers papers of the Wren library, Trinity College, Cambridge.

[32] In the terminology of spiritualism, a "control" is a spirit personality ostensibly taking control of the medium during the séance or "trance state". For Lodge's report on this first encounter with Myers in the afterlife, see Lodge, *Survival of Man*, 289-295.

[33] In ibid., 287.

[34] In ibid.

[35] Lodge, *Survival of Man*, 285.

[36] Ibid., 290.

specificity in "Myers'" communications, and wrote candidly about his suspicions of fraud and deceit on the part of the medium.[37]

The first responses to Myers' communications from the afterlife were thus mixed. It had precisely the same problems as other séances, with the only difference being that the person communicating was supposed to be a highly trained psychical researcher – and a personal acquaintance of the mediums themselves. In the longer run, however, Myers' communications marked the beginning of an entirely new line of research on survival. With the "same" spirit entity apparently communicating with numerous mediums independently of each other, it became possible to *compare* messages coming from different mediums in search of intertextual evidence of an independent personality active behind the communications. The assumption was that Myers would leave hidden clues across a wide array of séances, which could only be deciphered by the sophisticated minds of highly trained psychical researchers. This approach became known as "cross-correspondence", and was one of the strongest innovations of early 20th century psychical research.

The first systematic reports on cross-correspondences were published in the SPR *Proceedings* in 1908, and would continue to appear in following volumes. In 1910 the research was made available to a broader public through the concise exposition in Helen Alexandrina Dallas' *Mors Janua Vitae?* ("Death, the Gate of Life"; a later American edition was given this translated title), heartily endorsed in an introduction written by William Barrett.[38] Dallas, a member of the SPR who had taken the trouble to carefully read and condense the already numerous and extensive reports and notes on the case, could now cite three mediums (or rather automatists) in particular, who seemed to be giving a voice and a pen to Frederic Myers, namely Mrs Piper, Mrs Verrall, and Mrs Holland.[39]

Margaret Verrall was a lecturer in classics at Newnham College, Cambridge (where Eleanor Sidgwick was principal), and wife of the Cambridge classical scholar A.

[37] See Luckhurst, *Invention of Telepathy*, 255.

[38] A later and more thorough discussion of the cross-correspondences was published by Herbert Francis Saltmarsh, *Evidence of Personal Survival from Cross Correspondences* (1938).

[39] In fact there a few other female automatists were used in these experiments, including Mrs Verrall's daughter, Helen, the Welsh suffragette and liberal politician Winifred Coombe-Tenant, Dame Edith Lyttelton (pseudonym Mrs King), and Mrs Stuart Wilson. We will meet some of these shortly.

W. Verrall. The Verralls had both known Myers personally while he was still alive, and participated actively in psychical research.[40] Margaret Verrall had also been running personal experiments with automatic writing, and it was through this method that she claimed to have obtained, a couple of months after Myers' death, a number of scripts written in Latin and some Greek, taking the form of a conversation. The second automatist, Mrs Holland, was known under a pseudonym: her real name was Alice Kipling, sister of the more famous Rudyard. She lived in India and had no relation with the SPR until she read Myers' *Human Personality* and consequently struck up a correspondence with the society's secretary, Alice Johnson, in June 1903. Holland/Kipling had been playing with automatic writing 'for her own amusement' since 1893, but after reading Myers' work, the style of these writings had suddenly changed.[41] Before they had been mostly in the form of poetry; now, suddenly, they claimed to be messages from the deceased Myers, and sometimes also from Sidgwick and Gurney. Significantly, *Human Personality*, which had so much inspired Holland, was dedicated precisely to these two men.

Then there was Leonora Piper (1857–1950), who in contradistinction to the two other ladies was known as a professional psychic medium with a long, and generally good, reputation. The latter was no doubt a rare commodity among mediums. Piper had been "discovered" by William James in the mid-1880s, who recommended her for testing with his SPR colleagues in England. In 1890 she visited, and became personally acquainted with Myers, Sidgwick, and Hodgson who functioned as her investigators.[42] In November 1906, Mrs Piper was shipped to England once more for testing with the SPR, now eager to ascertain the authenticity of the Myers and Sidgwick controls she had been exhibiting.[43] Richard Hodgson, who had first encountered Myers through Piper without being impressed, had passed in 1905; ironically, he too now appeared alongside the spirits of other researchers in Piper's gallery of controls. By 1906, some of the most prominent first-generation figures had returned from the afterlife, quite literally haunting the second generation from beyond the grave. From their new vantage point,

[40] See e.g. Saltmarsh, *Evidence of Personal Survival from Cross Correspondences*, 19-20.

[41] Ibid., 21.

[42] For a review of Piper's mediumship, as it looked at the time she was involved with the cross-references, see Lodge, *Survival of Man*, 184-315; cf. Dallas, *Death, the Gate of Life*, 58-87.

[43] E.g. Dallas, *Death, the Gate of Life*, 88-94.

they were now prompting the new generation to go much further in the direction of spiritualism than they themselves had thought wise while alive.

Verrall, Holland, and Piper would produce hundreds of messages in total, with the major breakthrough occurring during Piper's stay in England. As mentioned, the methodological basis for cross-correspondence research was that there seemed to be correlations between messages "received" independently by different mediums. Correspondences were typically cryptic, and made use of literary references that required some erudition to spot. Thus, for example, Piper's "Myers" asked to look out for 'Hope Star and Browning'. As it turned out, a message from Verrall's "Myers", recorded already two weeks earlier, was replete with explicit references to hope and stars, including in Greek and Latin, and citations from Robert Browning's *The Ring and the Book*.[44] This episode was part of a longer series of responses to the so-called "Latin experiment" of 1906, in which a specific question with instructions intended for "Myers" had been translated into dense and difficult Ciceronian Latin, and read to Mrs Piper in one of her "trance states". The message should be extremely difficult to decipher without a proper training in Latin, which Piper lacked but Myers had possessed in real life. The message gave specific instructions to Myers' spirit about how to continue the cross-correspondences, which the researchers assumed he had consciously initiated from beyond the grave.[45] Working on the assumption that the instructions in Latin would have been received by Myers's spirit unbeknownst to the mediums he communicated through, the researchers spent the next months attempts to draw significant references out of the mediums' statements. In the quest to find what they were looking for, the psychical researchers seized increasingly abstruse methods of interpretation, where hidden anagrams and secret symbols were considered for clues, down to the letter.[46] While they were ultimately convinced by the evidence thus produced, in the form of symbolic and thematic correspondences across a wide set of séance notes, it is hard for the outsider to avoid observing that they also stretched their interpretations to the limits in order to get to that conviction. Through reliance on the cross-correspondences the SPR seems to have abandoned their earlier attempts to

[44] See Luckhurst, *The Invention of Telepathy*, 265-267; cf. Dallas, *Death, the Gate of Life*,

[45] Dallas, *Death, the Gate of Life*, 98-100.

[46] The two main investigators at this point were the businessman and SPR council member John George Piddington and the secretary Alice Johnson. See the summary in Dallas, *Death, the Gate of Life*, 100-107.

emulate strictly naturalistic methods, and instead developed an increasingly esoteric form of hermeneutics.[47] It was the most extreme yet sophisticated case of a qualitative methodology in psychical research to date.

The cross-correspondences continued, with more automatists and researchers getting involved in the following years. On the side of the mediums, Mrs Willett (pseudonym for Winifred Coombe-Tennant, a Welsh suffragette and liberal politician)[48] became the centre of some attention for further experiments involving the Myers control from 1910 onwards, while the Right Honourable (later Lord) Gerald William Balfour – brother of Arthur and thus another SPR member from the Balfour dynasty – became a chief investigator.[49]

With the spiritualist revival following the Great War, the strictly science oriented faction of the SPR found itself in a rather difficult position. This was reflected above all by a number of institutional divergences during the 1920s. In England, the move away from a stricter scientific perspective towards a looser hermeneutic play designed to *interpret* rather than *explain* spirit conversations, and an increasing adherence to spiritualism within the society itself, provided an open niche which was filled by the National Laboratory for Psychical Research, established in London in 1925 by Harry Price.[50] Price is an ambiguous character; he had been interested in psychic phenomena since childhood, had developed a passion for stage magic and illusionism, and succeeded in convincing the University of London to support his establishment of a more scientific counterpart to the SPR.[51] Price's Laboratory would play a significant role in activity that comes closer to high-profile "debunking" than to actual research. A highlight was his 1932 "Brocken experiment", in which a full "black magic" operation

[47] A similar observation was made by Luckhurst, *Invention of Telepathy*, 265.

[48] Coombe-Tennant was another central medium and automatist who preferred to keep her involvement in psychical research a secret to the public while alive. This, obviously, helped her pursue her for the times quite unusually successful political career for a woman – even though psychical research in fact furnished her with powerful contacts, such as the Lord Balfour who had been President of the Board of Trade, and member of the King's Privy Council. See also Graham Lloyd Rees, ' Coombe Tenant'.

[49] Balfour reviewed the experiments with Willett/Coombe-Tennant in volume 43 of the *Proceedings* of the SPR, in May 1935. Cf. Saltmarsh, *Evidence of Personal Survival from Cross Correspondences*, 24-25.

[50] For their early activities, see *Proceedings of the National Laboratory of Psychical Research*, Vol. 1, 1927-1929.

[51] See e.g. Beloff, *Parapsychology*, 94.

was performed on the mountain Brocken in Germany, traditionally connected to the witches' Sabbath, on midsummer's eve.[52] With the world press attending, the magical experiment attempted to transform a virgin male goat into a young man. Sensationally, nothing happened. What was to be gained by the experiment in terms of scientific knowledge remains entirely unclear.

Meanwhile in the United States, the American SPR was going through a schism precisely on the topic of whether or not to align strictly with science. This schism was nowhere more significant than in Boston, where the American SPR had its headquarters, and some of the most well-known American mediums were operating. William McDougall, who arrived in Boston in 1920 and was elected president of the ASPR the following year, came to have a decisive impact on the outcome of these controversies. First of all, his actions as president underscored the ongoing bifurcation between a pro-spiritualist and a pro-science wing within the society. Hailing from a strictly science-oriented research tradition, and possessing no personal leanings towards spiritualism or occultism whatsoever, McDougall was not impressed by the current influx of spiritualists to the ASPR. Consequently, he spent a public lecture in 1922 attacking committed spiritualist like Arthur Conan Doyle, whom, he complained, were apparently more interested in extravagant demonstrations of mediumship than in critical scientific investigations of the phenomena.[53] McDougall's clear statement, siding with the scientific wing of the ASPR, proved divisive and controversial. A year later the trustees of the society decided to dismiss his presidency – firing McDougall's ally, Walter Franklin Prince, from the editorial chair of the Society's journal while they were at it.[54]

At this point the American conflict was no longer purely ideological, but became embodied in an institutional schism. Prince reacted to the spiritualist take-over of the SPR by establishing the rival Boston Society for Psychical Research (BSPR) in 1925 – incidentally the same year as Price had revolted against the British SPR in England.

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[52] For thorough documentation of this event, see the extensive press-clippings Price kept, which attests to the massive media coverage the ritual attracted from countries all over the Western world. Price, "Press cuttings book (vol. 14)", 1932; Harry Price Archive, HPF/3A/14; Senate House Libraries, University of London.

[53] McDougall, 'The Need for Psychical Research', 59-60.

[54] Cf. Moore, *In Search of White Crows*, 176. See my discussion in the following chapter, which considers McDougall's career in this period in some detail.

Apart from the deeper ideological differences, an important immediate context of this split was the handling of the controversial Margery case. As mentioned briefly in the previous chapter, the committee that had been put together by John Malcolm Bird, editor of *Scientific American*, eventually decided against the medium's genuineness, while Bird himself had become increasingly convinced of her powers. Kicking out critics like McDougal and Prince, while installing Bird as Research Officer of the ASPR, the society also came to disregarded the verdict of the Margery report. Instead of following sticking with the report of the committee, the ASPR started publishing a number of positive reviews and defences instead. These were written largely by Bird himself, and by Margery's husband, the surgeon Le Roy Crandon.[55] The Society had thus effectively been hijacked by what Prince called 'the Crandon group'; it had become 'a propaganda platform', continuing to issue not only articles and reviews, but also books and pamphlets in the defence of Margery, while silencing and censoring opposing voices and criticisms in the Society's publications and in the public sphere. Prince, who wrote and published a thorough review of the case in *The American Journal of Psychology* in 1926 even documented how the Crandon group had systematically edited the original transcripts of the Margery sittings, omitting crucial pieces of evidence and also tinkering with the presentation in more subtle ways to direct the reader in favour of the medium's genuineness.[56]

The year 1925 thus marks a significant shift in the history of psychical research. It was the year when the SPR was finally severed from the strictly scientific aspirations of its founders, while new spokespersons, movements, and institutions emerged with the intention of carrying on the torch. Some of these would explore more quantitative approaches to the subject, and introduce more rigid controls of their experiments. But before we get there, we must have a look at the institutions and research projects that were being pursued in continental Europe, largely independent of the SPR. Intriguingly, we shall see that very similar conflicts arose in the German and French research traditions, even coinciding in time with the developments we have considered for England and the United States.

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[55] Cf. Prince, 'A Review of the Margery Case', 432. Cf. Crandon, 'The Margery Mediumship'.

[56] Ibid., 438-440. The publication Price uses as an example for these documented alteration was the anonymously published pamphlet *Margery-Harvard-Veritas: A Study in Psychics* (1925).

Parapsychologie and *Métapsychique*: Two Continental Schools

Reflecting upon the fragmentation in psychical research in 1926, Hans Driesch invoked the many different names currently in use to denote specific approaches in the field.[57] In addition to the English "psychical research", there was the French "*métapsychique*" and the German "*Parapsychologie*". Both evoked similar associations about a special science related to mainstream psychology, but with their own peculiar histories and charged with special connotations. They denoted two major attempts at creating a paradigmatic framework for the discipline. In the French case more than in the German, there was also a determination to build institutions, and with it, a push towards internationalisation. In this section we shall briefly review these two schools, starting with German *Parapsychologie*.

* * *

The word "*Parapsychologie*" can be traced back to an article in the occult journal *Sphinx*, written by the philosopher Max Dessoir (1867–1947) in 1889. German psychical research had remained tightly connected to the general occult scene, sharing the journals *Sphinx* and *Psychische Studien* with Theosophists and spiritualists.[58] Dessoir belonged to a faction within German psychical research that wanted to take a more scientific approach, following in the vein of the British pioneers. He therefore suggested the term *Parapsychologie* to identify an emerging scientific field that studied the 'pathological conditions' of this 'border area between the average and the abnormal'.[59] Dessoir's proposal apparently fell on fallow ground, however, for the word was not adopted and a more scientific discourse on psychical research (referred to rather as 'Psychische Studien') did not manifest in Germany for many years still. The first real attempt to consolidate German psychical research around a set of ostensibly "scientific" procedures, partly institutionalised through the promotion of specialist journals, centralised offices and laboratories, slowly emerged in the years before the Great War. The leader of these efforts was Baron Albert von Schrenck-Notzing (1862–1929) in

[57] Driesch, 'Psychical Research and Philosophy', 161.

[58] For the German situation in this early period, see Bauer, 'Periods of historical Development of Parapsychology in Germany'; cf. Wolffram, *Stepchildren of Science*, 33-82.

[59] Dessoir, 'Die Parapsychologie', 342. My translation.

Munich.[60] Originally trained as a physician, and versed in the controversial field of medical hypnosis,[61] Schrenck-Notzing became a man of independent means after his aristocratic marriage to Gabriele Siegle in 1892. Eventually, this marriage and the financial capacity he thus acquired would be essential in establishing a laboratory for psychical research, and for further attempts at consolidation and institutionalisation of this field in Germany.[62]

In the years before the Great War, Schrenck-Notzing established a laboratory in his palatial home on Karolinenplatz in Munich, furnishing it with all sorts of medical equipment, special lighting, and cameras. His intention was to work with spiritualist mediums, under conditions that were controlled and well-equipped for research, nonetheless it still had the atmosphere of a spiritualist séance room. As Wolffram writes, the Baron's laboratory room was 'a hybridisation of spiritualist and scientific space that posed less of a threat to its psychologically fragile subjects than those laboratories found in the hard sciences'.[63] The presence of instruments of measurement and observation were particularly important since Schrenck-Notzing had a marked preference for working with those notorious "physical" mediums who claimed to produce not only "mental" phenomena of telepathy, clairvoyance, or coded messages from beyond the grave, but various physically *tangible* effects as well. That is to say, the "Geisterbaron" was interested in moving objects, levitations, ectoplasm, and full-form materialisations. Indeed, one of the lasting contributions of the research programme in Munich is the great number of extraordinary photographs of famous mediums with

[60] On Schrenck-Notzing, see Wolffram, *Stepchildren of Science*, 131-189. A problem with our knowledge about this important phase of German psychical research is that most of the unpublished Schrenck-Notzing material has been lost. This goes for almost his entire scientific correspondence, as well as personal papers, diaries, and notebooks. Much appears to have been lost during the 1930s, when the baron's estate in Munich was expropriated by the Nazi government, seeking to establish offices there. Other parts were stored in a building in Munich that was bombed during the war; some material might also have been deliberately demolished. For these reasons, there is not so much evidence on Schrenck-Notzing's research except what he published. Conversation with Dr Andreas Fischer (IGPP, Freiburg), 28th October, 2010.

[61] His main contribution to this field was published in 1888: Schrenck-Notzing, *Ein Beitrag zur Therapeutischen Verwerthung des Hypnotismus*.

[62] Cf. Wolffram, *Stepchildren of Science*, 57.

[63] Ibid., 132.

ectoplasm issuing from the orifices of their bodies and taking the shape of the spirits channelled. Some of these were published in the book *Materialisations–Phänomene* in 1914, including famous flash photographs from laboratory séances with the mediums Eva C. and Stanislawa P.[64]

Schrenck-Notzing's reports on experiments with such "gifted" mediums show him quite unwilling to offer up clear explanations and hypotheses for the phenomena observed, beyond the fact that he considered them to be for the most part "genuine". He did, however, clearly identify with the "animist" as opposed to "spiritualist" camp that we discussed in the previous chapter.[65] For example, the preface to the first German edition of *Materialisations-Phänomene* started by noting that spiritualism had become completely 'discredited', and that this fact was causing a great deal of trouble for serious and intelligent men who had dedicated themselves to its study.[66] By agreeing that spiritualism was discredited, the baron interestingly positioned himself differently from most second-generation colleagues in the SPR. What his exact position was, however, is much harder to establish, as the baron remained vague about what animism really entailed. Formulating himself in a language reminiscent of earlier German romantic *Naturphilosophie*, particularly in the Mesmerist tradition, Schrenck-Notzing argued that his experiments might succeed in 'directing attention to a dark and unexplored side of human Soul Life, and in particular to certain problematical psycho-physical effects'.[67] Characteristically, Schrenck-Notzing ended a chapter on 'Facts and Hypothesis', which read pretty much as a "Stand der Forschung" for physiologically and psychologically oriented research on mediums up until the Great War, with the non-conclusion that: 'it is advisable to-day to verify, to observe, and to *refrain from conclusions*'.[68]

In other words we have the presumption of pure experiment without theory – or, at the very least, a minimum of theory. Nevertheless, it is obvious that Schrenck-Notzing *did* presuppose certain hypotheses, and that these guided his experimental choices. For

[64] Translated into English in 1923, under the title *Phenomena of Materialisation*. The English edition also included certain later material that had appeared after the initial publication in 1914, and was furnished with no less than 225 illustrations.

[65] The preface to the first German edition of *Materialisations-Phänomene* started by reassuring that the spiritualist hypothesis was completely discredited, for example.

[66] See ibid., v.

[67] Ibid., vi

[68] Ibid., 28-36, 35. Emphasis added.

example, supernormal abilities were due to unexplored functions of the human organism, and, as with other abilities with a physical basis, people might be unequally endowed, some being more talented than others. On this assumption, it made sense to select only those who seemed to possess some special talent, and the palatial laboratory in Munich became a centre for some of the most well-known, not to say infamous, physical mediums on the continent. The hypothesis of rare talent even led Schrenck-Notzing to start controlled *training* of some of his mediums, claiming thereby to increase their skills at producing certain phenomena under difficult experimental circumstances. This was achieved through the curious use of "medium contracts": the baron would legally bind certain talented mediums to his laboratory for longer periods of time, so that he could help them "unlearn" their spiritualistic habits, and train their supposedly "natural" skills to work optimally under the desired conditions.[69]

Incidentally, having top mediums in residence (Schrenck-Notzing would pay an allowance, provide lodging with well-off friends in Munich, and in some cases even provide basic health care packages) also had the effect of *monopolising access* to the "raw data" of psychical research in Germany. It became very difficult for anyone to work in the field independently of Schrenck-Notzing, since he possessed the legal right to some of the best mediums.[70] Over the course of a decade, the baron was building up near complete dominance of the field from his base in Munich. He acquired editorial control of the journal *Psychische Studien*, which had been around since 1874. In 1925 he renamed it *Zeitschrift für Parapsychologie*, a name that more appropriately signified the scientific pretensions of Schrenck-Notzing's project.[71] However, Wolffram has shown that the increasingly monopolistic and autocratic position Schrenck-Notzing took in German parapsychology eventually led to a split, as the dissatisfaction of scholars and researchers of a younger generation grew.[72] His opponents felt that Schrenck-Notzing was using his money, influence, and social position to set the agenda for German parapsychology, in so far as he controlled the editorial staff of the field's leading journal

[69] For example, he had Eva C. for four years, while the Polish medium Stanislava P. was held for observation over a six-month period. Cf. Wolffram, *Stepchildren of Science*, 169.

[70] See Wolffram, *Stepchildren of Science*, 162-169. Wolffram especially looks at the case of the Austrian boy and "gifted" medium Willy Schneider.

[71] Cf. ibid., 60-61, 133.

[72] Ibid., 165-169.

and dictated its content.[73] In 1925, a group of opposing researchers founded the *Zeitschrift für kritischen Okkultismus*, a journal staking out a quite different course for parapsychology, both in terms of content and methodology. It was run by a number of people whose expertise in the field had been somewhat pushed aside by Schrenck-Notzing's dominance, including the psychologist Richard Baerwald, the lawyer Albert Hellwig, and the ophthalmologist Rudolf Tischner.[74] Initially, the baron responded to this new initiative by attempting to become a member of the editorial board. This was, however, precisely the sort of thing the rebels protested against, and his candidacy was duly rejected.[75]

Similar to what had happened that very same year in England and the United States, where old institutions broke up and new ones were created, the split between Schrenck-Notzing and the "critical occultists" became a battle over what counts as appropriate scientific conduct in psychical research. Although the name today rings odd, the critical occultists in fact took a hard-nosed naturalistic attitude to parapsychology, positioning themselves close to the utterly sceptical "psychology of the occult" that we encountered in the previous chapter. With reference to the strategies of naturalisation that we discussed earlier, the critical occultists were thus leaning towards *reductionist* strategies, including "negative" ones in which the phenomena were explained away by psychopathology, illusion, etc., per the research of Joseph Jastrow. In fact it was this rather confrontational strategy that prompted Schrenck-Notzing to change the name of *Psychische Studien*, and to give even stronger rhetorical emphasis on "science" in order to defend the status and reputation of his line of research.[76] The battles that ensued between the schools eventually led to the downfall of Schrenk-Notzing's Munich laboratory. When he died suddenly in 1929, his research programme faced the only destiny one would expect for an institution built on one man's autocratic leadership. Meanwhile, no other institution managed to take its place. Although a few individual researchers remained active, Germany would not have an experimental parapsychology

[73] Ibid., 165.

[74] Ibid.

[75] Ibid.

[76] Ibid., 165-168.

programme again until Hans Bender (1907–1991) established the Institüt für Grenzgebiete der Psychologie und Psychohygiene in Freiburg in 1950.[77]

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The term *Métapsychique* was first suggested in a presidential address before the SPR in April 1905 by the Society's first French president, the physiologist and later Nobel prize winner Charles Richet.[78] The situation of psychical research in France at the beginning of the 20th century was somewhat different from that of Germany, due to the presence of research on "supernormal" phenomena in the context of established psychiatry and physiology, as well as a more active collaboration with England.[79] Richet, who had also coined the term "ectoplasm" in response to a series of sittings with Eusapia Palladino in 1894,[80] was an important scientific ambassador for psychical research in France. He had conducted research on somnambulism and suggestion in the context of mainstream psychiatry, and was a driving force for establishing a French journal for psychical research in 1891 (*Annales des sciences psychiques*).[81] In the 1880s he also did some important quantitative work on thought transference and card readings that involved a use of probability analysis that was advanced for its time; however, he would soon turn away from this way of working and focus on qualitative aspects.[82]

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[77] Ibid., 195-177. Cf. Bauer, 'Periods of historical Development of Parapsychology in Germany'. An additional reason for this delay is no doubt the rise to power of the NSDAP. As seen from the correspondence of people like Driesch and Bender in the 1930s, psychical research was made increasingly difficult in the Third Reich – despite some circumstantial evidence of a short lived attempt by the state to establish a parapsychological research group under the propaganda department. See e.g. Bender to J. B. Rhine, October 16, 1936 (Bender - Rhine correspondence, 1936-1950; IGPP-Archiv 10/5, A II 13).

[78] Richet, 'La Métapsychique', 13-14.

[79] For a historical overview of the developments in France, from "spiritism" to the various schools of psychical research and "metapsychics", see especially Sofie Lachapelle, *Investigating the Supernormal*. Cf. John Warne Monroe, *Laboratories of Faith*; Bertrand Méheust, *Somnambulisme et médiumnité*.

[80] The sittings were held at Richet's cottage on a remote island off the southern coast of France, and was also attended by Oliver Lodge and Frederic Myers. See Grean Raia, 'From Ether Theory to Ether Theology', 19-20.

[81] Cf. Lachapelle, ' Attempting Science', 4-5. Cf. idem, *Investigating the Supernatural,* 113-142.

[82] Richet, 'La suggestion mentale et le calcul des probabilités'. See my discussion of quantiative research below.

During the first two decades of the 20th century several attempts were made at institutionalising psychical research in France, but without much lasting success. The *Annales des sciences psychiques* became a central rallying point for these attempts, and from 1908 until the Great War the journal was officially connected with the Société Universelle d'Études Psychiques (SUEP), a small psychical research society based in Lille.[83] As documented by Sofie Lachapelle, a great number of regional journals and small societies popped up in France during this period, inspired by the efforts of the *Annales*. Among these were the Institut Psychique International in Paris (founded in 1900), which later morphed into the more mainstream psychological society Institut Général Psychologique (IGP).[84] While this society did host some famous experiments with Eusapia Palladino between 1905 and 1907,[85] it would generally abandon psychical research and focus on more respectable topics of psychology. This created a vacuum, which was to be filled only after the war by the Institut Métapsychique International (IMI).[86]

The idea of this institute was conceived by the physician and committed spiritist Gustave Geley (1868–1924), with the help of Italian epidemiologist Rocco Santoliquido (1854–1930).[87] Similar to what we have seen in other national contexts, Geley and Santoliquido represented a faction that was dissatisfied with the lack of recognition of psychical phenomena within mainstream psychology on the one hand, and the lack of rigorous scientific thinking among "spiritists" and psychical researchers on the other. To remedy the situation, they wanted to build a fully equipped laboratory, a library with the best available literature, and an information office to disseminate knowledge to the public and to educate mediums.[88] In addition to this, international collaboration was emphasised, arguing that a unification of research efforts in different countries would

[83] Cf. Lachapelle, 'Attempting Science', 5.

[84] Ibid., 5.

[85] These are portrayed, together with her other continental sittings, in Hereward Carrington, *Eusapia Palladino*, 129-134 . In Paris, the medium was tested by a number of highly esteemed scientists and academics, including Richet, Henri Bergson, and Pierre and Marie Curie.

[86] Cf. Lachapelle, 'Attempting Science', 5-7.

[87] Following convention, I use the term "spiritist" to denote the peculiarly French reception of mediumistic phenomena that were given a unique spin by Allan Kardec in the mid-19th century, thus distinguishing it from generic "spiritualism". See e.g. John Warne Monroe, *Laboratories of Faith*, 95-149.

[88] Lachapelle, 'Attempting Science', 6.

be beneficial to the construction of a solid and progressive research programme.[89] The plan was finally realised after Santoliquido and Geley were introduced to Jean Meyer, a wealthy industrialist and spiritist. Meyer was convinced to finance the establishment of a spiritist institution (Maison des Esprits) and a scientific laboratory for psychical research.[90] The IMI was born in spring 1919, part product and part reaction to earlier attempts of psychical researchers, both in France and abroad. The IMI availed itself of similar strategies as those used by the early SPR: it created an organizational body on the model of the professional scientific association, as had the SPR; it established a laboratory, as had Schrenck-Notzing; and it recognized the importance of setting up strict boundaries to dissociate the group's activity from blatantly "unscientific" practices. The adoption of the term *métapsychique* was itself a part of such boundary-work at a time when the term "psychical research" (or "science psychique") was becoming increasingly tainted with associations of spiritualism and occultism.[91]

The IMI did not appear to introduce anything radically new in terms of research methodology. The main focus was on mediumistic phenomena, and Geley, who became the first president, directed research towards his own favourite topic, ectoplasm.[92] Thus, judging from Geley's 1924 book, *L'ectoplasmie et la clairvoyance*, the IMI's research did not differ much from what was going on in Munich. A somewhat broader spectrum of interest is nevertheless reflected in the pages of the new journal that the Institute established in 1920, the *Revue métapsychique*. As Lachapelle summarises, the journal

> published research on mediumistic productions and other faculties of the mind, on extreme manifestations of religiosity and mysticism, and on phenomena of a similar kind produced in the Orient; it provided discussions on ways of reconciling metapsychical phenomena with the laws of physics and biology; and it presented practical considerations on the role of metapsychics in medicine and justice. Moreover, the *Revue métapsychique* always contained book reviews and news of the field around the world. It put itself forward as a unifying venture into the scientific study of the psychical.[93]

[89] Ibid.

[90] Ibid., 7.

[91] See the next chapter for a thorough discussion of these strategies, and the way they would eventually make professional parapsychology possible.

[92] Ibid., 8.

[93] Ibid., 7-8.

Apart from the president, the society was governed by a directing committee that represented a continuity with the past as opposed to a radical break from it. The committee included Richet and the famous physicist and spiritist Camille Flammarion, while celebrities such as Oliver Lodge and Hans Driesch were soon invited from abroad.[94]

As to the theoretical standpoint of the IMI, Richet's notion of *métapsychique* unsurprisingly dominated. Richet himself gave the approach its fullest expression in *Traité de métapsychique* (1922), where it was defined as 'a science which object is the phenomena, mechanical or psychological, that are caused by forces that seem intelligent, or by unknown latent powers of the human mind'.[95] This, obviously, was an extremely open definition of a field. Characteristically, it focused on certain "phenomena", while providing nothing concrete in terms of theory. Richet's *métapsychique* appeared, indeed, even less theoretically rigid than Schrenck-Notzing's *Parapsychologie*, in that the definition gave room for "spiritualist" in addition to "animist" explanations (e.g. external "intelligences" as well as "latent powers"). Richet even wrote explicitly in the book's introduction that no theory would be proposed since all theories seemed to him equally insufficient.[96] This, however, did not keep the Nobel laureate from summing up the whole field by mention of three *concepts*: "cryptesthesia" (*cryptesthésie*), "telekinesis" (*télékinésie*), and "ectoplasm" (*ectoplasmie*).[97] These were presented as "facts", but it does not take too much competence in the philosophy of science to see that they were much more than that, each concept presupposing specific theoretical choices. For example, as illustration of what he termed "subjective metapsychics" of the cryptesthetic kind, Richet mentioned how the assassination of Queen Draga of Serbia had been announced by a medium in Paris at the very moment when it was committed in Belgrade, without there being any possible 'normal cognisance of the crime'.[98] But to

[94] Cf. ibid., 7.

[95] My translation. French original reads : '*une science qui a pour objet des phénomènes, mécaniques ou psychologiques, dus à des forces qui semblent intelligentes ou à des puissances inconnues latentes dans l'intelligence humaine*.' Richet, *Traité de métapsychique*, 5.

[96] Richet, *Traité de métapsychique*, i.

[97] Ibid., ii.

[98] Ibid., 4.

classify the event as "supernormal" already presupposes a "metapsychical" theory of perception, which allows the interpretation of the event as something else than a chance occurrence. Similar objections could be raised for the other categories presented by Richet as theory-neutral "facts".

Indeed, a rather harsh criticism along these lines was put forward by the American psychologist Joseph Jastrow a few years later, portraying Richet's *métapsychique* as no less theory-laden than Conan Doyle's spiritualism:

> Is it possible that M. Richet does not see that in crediting as *facts* the thousand and one things that transcend the scientific experience, and which he admits are wholly discredited by his scientific confrères, he is woefully begging the question or befogging the issue? Is he unaware that he is assuming, inferring, conjecturing, asserting, imagining or throbbing the theory that they are of supernormal origin? Is he unaware that while professing to refrain from theories, he is none the less theorising, subtly theorising, boldly theorising at every step? Unaware that the metapsychic position is no less a theory, indeed a highly speculative fantastic hypothesis, an extravagant conjecture, quite as much as the theory of spirit agency which Sir Arthur Conan Doyle holds with every defiance of elementary logic, but which Professor Richet regards as a needless or unfounded theory in the special sense of a detailed *modus operandi* or "mechanism" theory of how the effects are produced, but which effects he regards as of supernormal origin quite as much as does Conan Doyle?[99]

It seems safe to say that Richet's metapsychics did little besides updating Myers' "supernormal" and adding another layer of sciency rhetoric. In other words, a more robust and successful methodological paradigm was still not in sight. Instead, from the mid-1920s IMI would go through exactly the same kinds of conflict between a pro-science and a pro-spirit(ual)ism branch as characterised the American, British, and German research communities in the same period. In 1926 Réne Sudre made an attempt to update metapsychics and place the discipline within a consistent and meaningful theoretical and methodological framework, but succeeded only in creating discord in

[99] Jastrow, 'The Animus of Psychical Research', 298. To illustrate the general tone of Jastrow's critique – which was nothing short of scathing – here is his initial verdict on the introduction to Richet's book: 'In these less than six hundred words from a book of more than six hundred pages, there are involved enough logical fallacies … to occupy a class of sophomores profitably and with only an elementary depth of analysis for six hours, and a class of graduate students prepared to enter into all the ramifications of the logical intrigue for six weeks.' Ibid., 298.

the society. His *Introduction à la métapsychique humaine* attempted to set the discipline on stricter naturalistic lines than before by completely dismissing the spirit hypothesis and going for an *animist* position, in which the universe was seen to contain irreducible creative forces – not dissimilar from the philosophy of Henri Bergson. For his efforts, Sudre was rewarded with a message declaring him *persona non grata* as contributor to IMI's journal, the *Revue métapsychique*.[100] Expelled from the journal for suggesting a modest pro-science view, Sudre withdrew from the society altogether, and was followed by others likeminded. Shortly after this episode, the internal ideological frictions became even clearer, as did the fact that the problem stemmed from the IMI's source of funding. An open conflict between the financial founder, the spiritist Jean Meyer, and Santoliquido, who was then president of the institute, erupted in 1928. Meyer, realising he was getting older, made certain institutional and financial arrangements for the future, which caused much concern. The new arrangements implied that the society's board of directors was stripped of their power to decide on financial matters. How the society was to spend its money was instead put solely in the hands of private shareholders who were for the most part active spiritists, handpicked by Meyer himself.[101] The decidedly biggest shareholder was Meyer's old butler, a certain M. Forrestier, who had gradually gained more influence over his master, rising from butler to secretary before ending up as Meyer's private spirit medium.[102] When Meyer's will turned out to leave the ex-butler a large part of the inheritance, the family contested the authenticity of the will. They gained the support of the IMI, fearing that the spiritists had succeeded in taking control of the resources which had until then been used to support the scientific and presumably nondenominational efforts of the institute. Sure enough, the conflict ended with Forrestier blocking IMI's funds, and the organisation was thrust into a state of serious financial insecurity.[103]

The IMI's final demise was, however, due to quite different factors. Somewhat surprisingly, perhaps, the organisation's fall came as a result of its aggressive policy of internationalisation.[104] During the inter-war period, there was a total of five

[100] Lachapelle, 'Attempting Science', 11.

[101] Ibid., 11-12.

[102] Ibid, 12.

[103] Ibid.

[104] Ibid., 18-22.

international conferences of psychical research in Europe, the first held in Copenhagen in 1920, and the last in Oslo in 1935.[105] At that point, cooperation had already become difficult due to the Nazi take-over in Germany, and the triumph, once again, of local patriotism over internationalism. Local patriotism was, however, a problem for international psychical research already in the late 1920s, as seen in the conflict ensuing over IMI's attempt to establish and lead a permanent international congress centre in Geneva. People such as Driesch, Lodge, and Carl Gustav Jung had been suggested for the provisory committee of the centre, together with the Paris/IMI troika Osty, Richet, and Santoliquido.[106] Driesch, being the German delegate to this venture, was given a reprimand by Schrenck-Notzing, who saw behind the initiative a covert attempt by the French to secure international domination of the field. The suspicion was strengthened when the French proposed that the next international conference, which was being planned for Athens in 1930, should be cancelled in order to avoid a bifurcation of the milieu of researchers internationally.[107] Due to these controversies, more people began to express hesitation about contributing to the project. When both Santoliquido and IMI's financier Meyer died in 1930, the institute's enthusiasm and momentum dwindled completely. In the end, no conference was held in Geneva. The Athens conference proceeded as planned, albeit with no French participation. The result of these events was a boost to English dominance, as the proceedings of these conferences being published for the first time in English rather than French.[108] The IMI had lost its momentum, and yet another ambitious plan to save psychical research through unification and scientization failed.

3. The Statistical Turn:
Quantitative Experimentalist Programmes in Psychical Research

[105] The three middle conferences were in Warsaw (1923), Paris (1927), and Athens (1930). For a short notice on these five conferences, see William Mackenzie, W. H. Slater, and Thorstein Wereide, 'Statement Regarding the International Congresses Held Between the Two World Wars', 134-135.

[106] Lachapelle, 'Attempting Science', 19.

[107] Ibid., 20.

[108] Ibid., 20-21.

The psychical research programmes we have considered so far share a number of commonalities. The SPR in England and the United States, the IMI in France, and the Munich laboratory of Schrenck-Notzing in Germany were all situated in a theoretical field that oscillated between spiritualism and animism. Their methodologies were open, in the sense that they would typically claim to bring in as little theoretical baggage as possible. In reality, however, they all presupposed that psychical phenomena were connected to certain especially gifted individuals. From this assumption it followed that the method of choice should be of a *qualitative* rather than a *quantitative* type. While all these projects emphasised some form of experimentalism, their laboratories were largely coextensive with the séance room. Special procedures, protocols, equipment and methods would be brought in, such as Schrenck-Notzing's photographic cameras and medical equipment, or the hermeneutical tools of the SPR's cross-correspondence research. Nevertheless, their methods remained qualitative: knowledge was to be built on a careful assessment of specifically chosen extraordinary events, conducted on a case-to-case basis.

Meanwhile, a *quantitative* research tradition was also in the process of being developed.[109] The quantitative programmes differed from the qualitative ones on a number of counts. They moved from the study of the minutiae of special cases, to isolated and measurable phenomena that could be tested in repeated runs, with many subjects, which yielded results that could be analysed statistically. Intriguingly, most of this work was carried out in institutional and social settings that were quite different from the groups we have discussed thus far. With a few notable exceptions, the quantitative approach was developed by those who pursued psychical research in the setting of ordinary universities. In this section I shall give an overview of these programmes. But, before moving to the most important quantitative programmes, which we find in American universities from around 1912 onwards, we should first take a quick look at the ambiguous position of quantitative research in the traditional

[109] Once again I wish to make it clear that my use of "research programme" is intended to be read along the lines of Lakatos. In other words, the "quantitative research programme" that I speak of here is a "rational reconstruction", which identifies and discusses certain traits of theory formation and methodology that were developed, sometimes independently of each other, sometimes in a historical continuity. Thus, one should be careful not to confuse a "research programme" with a specific and unified "tradition".

psychical research societies. What was the relation between statistics, probabilities, and controlled experiments, on the one hand, and qualitative case studies, on the other? What kinds of theoretical and methodological problems were such practices connected with in the literature? Briefly considering these questions makes us better equipped to appreciate the parallel developments in university contexts, and evaluate the degree of novelty and innovation they represent.

* * *

Despite a preference for the study of mediums, quantitative studies of isolated effects such as telepathy had already been conducted in the early years of the SPR.[110] In fact, there was even a prolonged debate about statistics and probabilities in the 1880s, sparked by Charles Richet's early work.[111] Richet appears to have been the first to apply probability calculus to the guessing of playing cards in a larger population, for which he found some very slight evidence of thought-transference – so slight, in fact, that he would soon enough conclude that card-guessing was a useless method, and that it was more fruitful to turn to the hypothesis that genuine supernormal faculty was rare.[112] Following Richet's publications, the economist F. Y. Edgeworth, an expert on statistics, contributed a series of papers to the SPR journal that explained the use – and *misuse* – of probability calculus.[113] For example, Edgeworth warned that even when probabilities seemed to rule against a pure chance result, and thus indicating that there is *some* agency involved, '[t]he calculus is silent as to the nature of that agency – whether it is more likely to be vulgar illusion or extraordinary law'.[114] In other words, probabilities can only be used to show that "something is going on"; that is, they may suggest some *correlations*, but say nothing about the mechanisms involved in causing the result.

The development of probabilities introduced a new and popular rhetorical tactic to the psychical research literature of the 1880s and 1890s, in which probabilities

[110] Murphy, 'Telepathy as an Experimental Problem', 266. For early examples, see e.g. Eleanor Sidgwick's reports in the *Proceedings of the SPR,* volume 8 (1892). See also Lodge, 'Experiments in Thought Transference'.

[111] E.g. Richet, 'La suggestion mentale et le calcul des probabilités'.

[112] Cf. Hacking, 'Telepathy', 438-439.

[113] Edgeworth, 'The Calculus of Probabilities Applied to Psychical Research', I and II.

[114] Edgeworth, 'The Calculus of Probabilities Applied to Psychical Research [I]', 199; cf. Hacking, 'Telepathy', 441.

against chance were liberally invoked for any kind of phenomenon that was being discussed. These figures were, however, given without any standardised method of control, and we find some utterly ridiculous numbers put on the most unfitting type of material. Gurney et al.'s *Phantoms of the Living* is exemplary: in one case the authors wrote that 'the odds against the occurrence, by accident, of as many coincidences of the type in question … are about *a thousand billion trillion trillion trillions to 1*'. Sometimes the authors did not even bother spelling the figures out because the number was so big: '[t]he argument for thought-transference … cannot be expressed here in figures, as it requires 167 nines – that is, the probability is far more than the ninth power of a trillion to 1'. [115] These early amateur uses of probability sparked a sharp debate in the very first volume of the *Proceedings* of the American SPR, where one of James' colleagues, the philosopher, logician and mathematician Charles Sanders Peirce, lashed out at Gurney et al.: 'I shall not cite these numbers, which captivate the ignorant, but which repel thinking men, who know that no human certitude reaches such figures of trillions, or even billions, to one'.[116]

Despite these early debates and controversies, new attempts to join qualitative and quantitative aspects together appeared in the psychical research societies of the early 1900s. Another notable series of experiments was run by the SPR researchers Clarissa Miles (whom we have briefly encountered as a council member of the Alchemical Society) and Hermione Ramsden in 1905 and 1907.[117] As with the previous experiments, these were quite crudely constructed. The "targets" used for thought transference were typically everyday objects, such as "spectacles", or natural phenomena, such as "sunset", making it extremely hard to calculate chance expectations. Furthermore, the experiments made use of a very limited number of subjects. In fact, the Miles-Ramsden experiments simply consisted of the two women "sending" thought fragments to one another from a distance at set times, with the one at the receiving end drawing down whatever came to her imagination. The only truly quantitative aspect was that the experiments were *repeated*, so that one could calculate how many

[115] Gurney et al., *Phantasms of the Living*, volume 2, 17; volume 1, 34. Similarly unbelievable figures are found throughout the two volumes.

[116] Peirce, 'Criticism on Phantasms of the Living', 150. Cf. the discussion in Hacking, 'Telepathy', 444-445.

[117] See the report in *Proceedings of the S.P.R.*, volume 22, pages 60-93. Cf. Murphy, 'Telepathy as an Experimental Problem', 266.

experiments out of the total number of runs had been successful. However, repetitions were made under different conditions every time, and with no possibility of controlling against chance. These are precisely the kinds of circumstances that make the application of probability analyses quite misleading.

The "targets" that were to be "transferred" from sender to receiver in these experiments constituted another serious methodological challenge. When the aim is to transfer whatever mental object comes into the mind of the sender, it becomes impossible to judge against chance: the images might not be random, after all, but could for example follow mental habits shared by the two experimenters. Another problem concerns the standard for what counts as a "hit": if the sender is thinking of a horse, and the receiver draws something that *might* look like the head of an animal with a mane, does that constitute a success or a failure? Would the same drawing have been considered a success even if the target had really been a lion? When transferring complex mental images, the answer always becomes heavily dependent on interpretation in each case. The experiments remain, in other words, half way between the quantitative and the qualitative.

This problem can be exemplified further by some aspects of René Warcollier's *La télépathie* (1921), another work that stands half way between the qualitative and the quantitative. Warcollier was a chemical engineer, and did his research in the context of the Parisian IMI and the *Revue métapsychique*. He focused on how different mental states influence telepathic abilities, with a special interest in drowsy and semi-sleeping states, and the effect of drugs such as alcohol, coffee, and various sedatives such as antipyrine. [118] Experiments with psychical phenomena under different mental conditions was one of the major contributions of Warcollier's research.[119] It was potentially a very important line of quantitative research, as it looked for different

[118] See e.g. Warcollier, *Experiments in Telepathy*, 165. Here, Warcollier followed a longer line of speculation in psychical research that certain mental states were more susceptible to supernormal functioning than others. Myers already speculated in this direction, and coined several new terms in his *Human Personality* (see e.g. the glossary on pp. xiii-xxii) to distinguish between such states. Miles and Ramsden had also worked with these hypotheses, particularly with the half-sleep states that Myers had called "hypnogogic" (from waking to sleep) and "hypnopompic" (from sleep to waking).

[119] See the report in *Proceedings of the S.P.R.*, volume 22, pages 60-93. Cf. Murphy, 'Telepathy as an Experimental Problem'. For a much later assessment by practicing parapsychologists, see Russell Targ & Jane Katra, 'Interpretive Introduction'.

correlations between effect rates and other factors. However, Warcollier also contributed qualitative analyses that attempted to explore the ways supernormal perceptions worked, including how images transmitted by telepathy would be "disturbed" and morph into similar, but different forms in the mind of the receiver (see figure 11 for an example). Looking for disturbances in the signal, however, means that the experiments have ceased to be tests of telepathy as such: that telepathic transfers happen is assumed from the outset, while focus is shifted from gathering evidential *support* to explaining the *function* of telepathy. To those yet unconvinced of the veridical status of the phenomena in question, this procedure would obviously appear premature, and bound to lead to severe biases in interpretation.

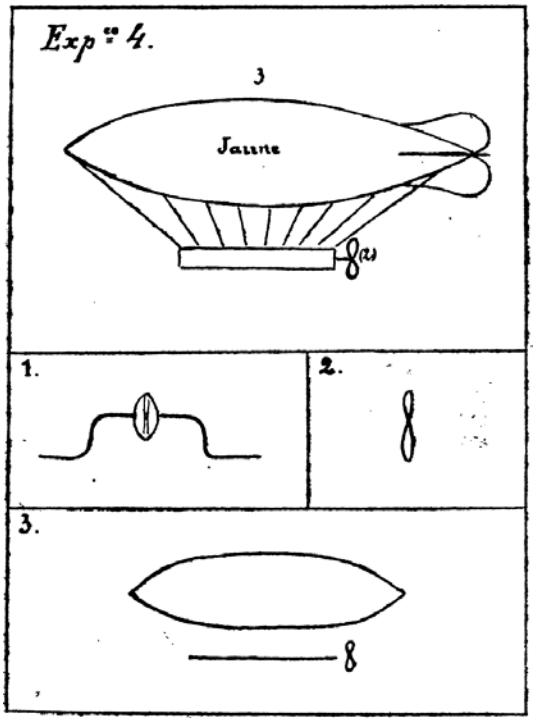


Figure 11: Example of Warcollier's interpretation of disturbed telepathic signals. The top image of a zeppelin was the target, while the three abstract figures below were part of the "hit" – seen as elements detached from the whole of the target image. Reproduced from Warcollier, *La télepathie*, 238.

Gardner Murphy, who's lecture at the 1926 conference at Clarke University amounted to an assessment of the relative strengths and weaknesses of previous experimental research, stated that the problem with Warcollier's research was a

recurring lacked of sufficient statistical controls.[120] This, as I have suggested, seems to be a general trend for experiments that tried to bridge the quantitative and the qualitative.[121] Attempts to mend these problems appear only to have been made once experiments in psychical research were conducted in the context of ordinary universities. Ironically, we shall see that Murphy's own attempts at improving earlier research ended up falling in the same trap. Other projects were methodologically more successful, however. In the following section I will describe four temporally consecutive research projects that all found their place within American universities in the period from 1912 to 1927. These are associated with the names John E. Coover, Leonard Thompson Troland, Gardner Murphy, and George Hoben Estabrooks. Of these four, I will devote the most space to Coover. The reasons for this will become apparent: Coover's was the first large-scale university sponsored research programme, and it was very significant in that it developed a sophisticated methodological framework that has even had an influence on methodology in the human and social sciences more generally. As we shall see, it also illustrates other problems and challenges in the field that are important. Coover, therefore, will be discussed in the first sub-section, while I will treat the three later projects together in the section following it. The four projects are united by an interest in "supernormal" *cognitive* functions (e.g. telepathy and/or clairvoyance), and a general commitment to *quantitative* methodologies. At the same time, the projects are divided on several crucial counts as well, including experimental design, rigour of controls, hypotheses advanced, and, importantly, the verdict reached on the phenomena's genuineness. What is more, the succession from one project to another

[120] Murphy, 'Telepathy as an Experimental Problem', 271.

[121] But also in at least one case of university sponsored trials of telepathy, namely the research carried out by Dr H. J. F. W. Brugmans and his colleagues in the psychology department at the university of Groningen in the Netherlands, in 1921. Brugmans and his colleagues used only one test subject, a young physics student, and even though they took measures to avoid certain biases such as unconscious sensory cues, other methodological flaws are evident: the target used was not very well suited for probability analyses (mental habits not ruled out); an apparently naive form of randomisation; and the usual lack of controls to check against a null-hypothesis. As with the Warcollier experiments, Brugmans' was discussed in the psychical research literature primarily because it too had tested the impact on various types of stimulants, including alcohol and caffeine, and suggested that self-reported states of relaxation, and the intake of alcohol both increased telepathic performance. For descriptions and discussions of this experiment, see e.g. Murphy, 'Telepathy as an Experimental Problem', 268-270; Mauskopf & McVaugh, *Elusive Science*, 8.

cannot be understood in terms of "progress"; there is no straight-forward accumulation of data, and no direct line of improvement in experimental designs. Instead, the "black box" of telepathy has pretty much been reopened for every new project, each considering other hypotheses than the prior.

JOHN E. COOVER AND THE STANFORD FELLOWSHIP IN PSYCHICAL RESEARCH, 1912-1917

The most significant of the programmes that will be reviewed here is the one designed and carried out by psychologist John Edgar Coover at Stanford University between 1912 and 1917. Coover's research is important for at least three reasons. To begin with, it was the very first time that psychical research was set up within a university programme, and led by a professional psychologist who was not committed to any prior agenda. Second, it was the first attempt to employ rigorous statistics and experimental controls on par with the best research methods available in psychology at the time. In fact, Coover even contributed to the development of stronger research methods in the human and social sciences at large, by creating more satisfactory controls and randomisation in the course of his telepathy research.[122] Third, the Stanford Fellowship in Psychical Research is notable because it illustrates the tensions between personal agendas, funding of research, and scientific integrity. As we shall see, the Stanford position was only made possible by a generous contribution from a wealthy spiritualist and businessman, Thomas W. Stanford, who was also brother of the university's founder, the Californian railroad tycoon Leland Stanford. [123]

I will begin with this latter point, since it concerns the institutional and historical contexts in which Coover's research was made possible. Similar to research societies outside of university structures, the Stanford Fellowship in Psychical Research was funded by someone with strong interests in a positive outcome. Thomas Wilton Stanford, who had emigrated to Australia in 1859 and made a fortune selling sewing

[122] See Ian Hacking, 'Telepathy: The Origins of Randomization', 446-449. Hacking even suggests that Coover may have been the originator of the very term "control experiment", in the technical sense it is used in clinical trials today. Ibid., 449. The standard work on randomisation and control in experimental design was published only as late in 1935, in the statistician and geneticist Ronald A. Fisher's *The Design of Experiments*. It is noteworthy that Fisher, too, published an article in the SPR *Proceedings* in 1924, where he suggested methods for working out the finer difficulties of analysing scores in runs of guessing playing cards. Fisher, 'A Method of Scoring Coincidence in Tests with Playing Cards'.

[123] For a brief contemporary review of the circumstances, see Frank Angell, 'Introduction', xix-xxiii.

machines, was a dedicated spiritualist and a co-founder of the Victorian Association of Progressive Spiritualists in 1870.[124] In fact, Thomas was not the only member of the Stanford family to have invested heavily in spiritualism: Leland Stanford's wife, Jane, had a well-known interest in the subject, and both she and her husband had participated in séances after their son died in 1884.[125] The contribution from Thomas Wilton Stanford created some headache for the university administration, which on one hand wanted to avoid associating itself with spiritualism, but on the other had to pay respect to the founders and financial benefactors. Using the money to create a new Fellowship in Psychical Research under the psychology department in 1912 was a compromise of sorts, providing a way to do something scientifically useful while remaining faithful to Thomas Stanford's wishes.[126]

Certain tensions between the research group and its benefactor would arise over the years that followed. Stanford seemed on the whole more interested in creating a room for spiritualism in the university than a centre for critical and constructive scientific work related to psychical research. One of his first requests after Coover had been appointed to direct the new research effort was that a number of books on spiritualism and occultism be purchased for the library: writing to the university in 1913, Stanford's secretary noted with pleasure that Andrew Jackson Davis' *Harmonial Philosophy* (perhaps the most important "theological" work to have emerged from the spiritualist movement), had been acquired, describing it as 'a work with which he [T. W. Stanford] is most familiar & commends its value in the highest terms of approval'.[127] The university staff were forced to handle the benefactor's personal interest more intimately when, in 1913, Thomas Stanford invited the chancellor and previous president of the university, David Starr Jordan, to see him in Melbourne and attend the weekly spiritualistic "Circles" that Stanford arranged at his offices with the medium

[124] E. Daniel Potts, 'Stanford, Thomas Welton (1832–1918)'.

[125] See, e.g., Theresa Johnston, 'Mrs. Stanford and the Netherworld'. The involvement of the Stanford family with spiritualism, and the relation to the early administrators and staff at the university – especially its first president, David Starr Jordan – is a fascinating topic that deserves further research.

[126] Cf. Angell, ' Introduction', xix-xx.

[127] Wm.J. Crook (T.W. Stanford's secretary) to W. E. Caldwell (secretary of The Board of Trustees, Leland Stanford University), June 10, 1913, John Edgar Coover Papers, Stanford University Library, Folder 1.

Charles Bailey. In a letter to Coover, Jordan wrote that he had decided to take this upon himself, and sarcastically remarked that he was 'likely to be a witness to "mysteries"'.[128]

Jordan did travel to Melbourne in January 1914, and kept a long correspondence with Coover through the winter and spring. Their correspondence illustrates the anxieties spurred by the situation. Stanford was clearly a "true believer", and had enough faith in the medium Bailey to organise sittings in his office every week. Coover and Jordan, however, both knew that Bailey had in fact been exposed as a fraud several times in the past, including by the SPR.[129] This created a delicate situation, since Stanford expressed a wish to invite *both* Jordan and Coover to examine Bailey – clearly expecting that the extraordinary phenomena were genuine, and some real proof could be put on the table in his very own office.[130] Coover ended his letter to Jordan expressing reservations about having to conduct experiments with Stanford's favourite medium: 'I should like very much if you would tell me just what the situation appears to you to be; I may have to go over, and I am assuming exposure would be very unfortunate.'[131]

The worries proved premature, however, for when Bailey learned of Stanford's intentions to invite researchers to test him, he suddenly vanished for a longer period, and drifted off from his circle in Melbourne. Jordan was convinced that the medium was avoiding him, and also that the prospect of Coover's arrival had 'scared a rascal out of a prosperous trade'.[132] With reference to these events, Coover himself would later write to Stanford, taking on a face of disappointment:

> I was sorry to learn that Charles Bailey, who is credited with so much psychic power, has so ruthlessly cut himself off from those who could have helped him put the phenomena upon a scientific basis. It would seem that his voluntary action runs counter to the intent and purposes of the "messages" which he is instrumental in delivering.[133]

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[128] Jordan to Coover, December 8, 1913, John Edgar Coover Papers, Stanford University Library, Folder 1.

[129] Coover to Jordan, December 26, 1913, John Edgar Coover Papers, Stanford University Library, Folder 1.

[130] Bailey's speciality was to make live hummingbirds appear during séances. The SPR had suggested that he could keep them in a nest that could be 'concealed within natural cavities of the body'. Coover to Jordan, December 26, 1913.

[131] Ibid., 3.

[132] Jordan to Coover, July 16, 1914.

[133] Coover to T.W. Stanford, June 28, 1917.

In the spring of 1916, when Coover was already well under way with his research, he filed a long report to the President of the university, Ray Lyman Wilbur, explaining the situation with T. W. Stanford.[134] The report made the delicate aspects of the matter explicit, particularly concerning Stanford's likely wish to donate his fortune to the university after his death (he was already in his 80s). Although Coover emphasised that Stanford had never interfered directly with research policies, he found it problematic that the benefactor showed so much interest in the results, and appeared to anticipate a vindication of spiritualism. Such expectations were in stark contrast to the realities of Coover's research: 'This anxious waiting for gratifying news, while results of research so far as the supernormal goes, are uniformly negative, creates an increasingly delicate situation', he wrote to Wilbur.[135] It was also clear that Stanford had wanted research into séance phenomena, while the line of approach taken by Coover was on experimental runs of telepathy. While he had also done some minor séance research on the side in San Francisco, Coover noted that this work was only useful as 'contributions to the psychology of deception, of delusion, of credulity, of inference, of belief, of scientific method'.[136] In other words, they conformed to the psychology of the occult in the tradition of Joseph Jastrow.[137]

One final aspect in this difficult relation between the funder and the researcher is evident from a correspondence between Coover and president Wilbur in August 1916. This shows that Thomas Stanford was pressing the university to hurry the publication of results in psychical research.[138] Coover was put under pressure by Wilbur in this respect, and the research had to be concluded and put into a publishable form earlier than Coover himself wanted. After some additional delay, it was finally published as a monograph in December 1917. The question of how Stanford would respond to the final outcome of his investment was the central topic of Coover and Wilbur's correspondence

[134] Coover to Wilbur, March 16, 1916.

[135] Ibid., 1.

[136] Ibid., 2.

[137] Cf. Jastrow, *Fact and Fable in Psychology*.

[138] Wilbur to Coover, 28 August, 1916.

on the publication.[139] Despite earlier differences and worries, Coover expressed certainty that Stanford would approve:

> I am confidently expecting Mr. Stanford to express his satisfaction with the work that has been done here in psychical research, the principal investigations of which are reported in the monograph, -not because he realizes that we have done but little in the line of his special interest (the investigation of "apports" and other séance phenomena), but because he, like any other intelligent and sound-minded business-man, cannot fail to see that we have attacked *genuine* "psychical" problems not only with vigor but with the *scientific* method, and he cannot fail to value such work even if he must leave its adequate comprehension to the specialist. I believe that Mr. Stanford will appreciate what others regard as solid work.[140]

These assertions may have been designed primarily to relieve the president. In any case, we do not know of Stanford's final reaction to the work: he died in his home in Melbourne in August 1918, apparently leaving no statement on the work that has survived.

Whatever Stanford's final satisfaction with his investment may have been, it is clear that he would not find any vindication of the spiritualist hypothesis on any of the monograph's 641 pages. Instead, *Experiments in Psychical Research* contained endless tables of numbers and variables detailing the quantitative results of thousands of telepathy experiments done with lotto blocks, playing cards, and even "the sense of being started at". It was furnished with long and detailed discussions about methodology, about the protocols used, the controls of the experiment, and the randomisations used to rule out unconscious biases. If this was not enough already to put off the committed spiritualist, Coover had also added reports on research into cognitive mechanisms that could explain *away* apparent supernormal phenomena, including one on "mental habit", and a report on completely original experiments on people's tendency to hear meaningful messages in nonsense syllables.[141] The monograph ended with an appendix that included a critical review of earlier quantitative approaches, tellingly entitled 'Grounds for Scientific Caution in the

[139] Wilbur to Coover, 28 Dec. 1917; Coover to Wilbur, 31 Dec. 1917.

[140] Coover to Wilbur, 31 Dec. 1917, 1.

[141] Coover, *Experiments in Psychical Research*, 230-410,

Acceptance of the "Proof" of Thought-Transference'.[142] No further comfort would be gained from reading Coover's conclusion on the most elaborate series of experiments that he ran, namely the approximately 10,000 experiments with 100 subjects attempting to guess playing cards "telepathically". 'Statistical treatments of the data fail to reveal any cause beyond chance', was Coover's calm conclusion after four years of research.[143] Additionally, his 1,000 experiments with self-declared "psychics" or "sensitives" showed 'no advantage for the psychics over normal reagents as claimants for the capacities of telepathy or clairvoyance'.[144] Furthermore, and this is significant in terms of the innovative methods employed, Coover reported that there was no difference between target and control groups – the latter meaning the cases in which, following randomised procedure, a card was guessed by the "reagent" even when no card had been read by an "agent".[145] This was the first time that telepathy tests had been run against a control, and possibly the first time that a "null-hypothesis" had been tested systematically in any quantitative experiment whatsoever.[146] In this case, the null-hypothesis had been strengthened, meaning that there was no statistical difference between control and effect group, and hence no trace of any effect that needed to be explained by telepathy in the first place. A hypothesis of no effect would do.

Experiments in Psychical Research was well received by leading academic psychologists, including James Rowland Angell, and Edward B. Titchener.[147] Titchener no doubt saw in it a powerful weapon to use against psychical researchers and spiritualists who continued to latch on to the field and threaten its scientific credentials. He looked forward to see more such 'debunking' work being published.[148] Indeed, Coover's monograph was supposed to be only the first volume in a series, and had been numbered 'Psychical Research Monograph No. 1'. As it turned out, none would follow. Writing to the president of Stanford University in April 1918, Coover expressed a strong wish to take up a different line of research, making it clear that he thought it rather

[142] ibid., 461-502.

[143] Ibid., 123.

[144] Ibid., 142.

[145] Ibid., 124.

[146] Cf. Hacking, 'Telepathy', 447-449. The expression "null-hypothesis" was only introduced about twenty years later, in Fisher, *The Design of Experiments* (1935).

[147] Cf. chapter five for the place of these men in American psychology in the early 20th century.

[148] Cf. Mauskopf & McVaugh, *The Elusive Science*, 53-54.

pointless to continue looking at psychical research after four long years of experimentation had borne singularly negative results. As he expressed it to president Wilbur, 'psychical research at Stanford University has avoided the precipitation of an academic scandal', by the thoroughness of its methodology.[149] However, 'I should have been better satisfied', Coover continued,

> with an opportunity to put part of my time upon research the material of which is not so meagre and elusive, not so offensive in the nostrils of my fellow psychologists, and more directly applicable to problems in psychology, education, or psychotherapy.[150]

With the United States now at war with Germany overseas, Coover wanted to join the Sanitary Corps of the Army, which he was able to do in November of 1918, with the rank of captain.[151] In the meantime, he had arranged a plan to restructure the California Psychical Research Society in San Francisco, to have it function along responsible scientific lines, and watched over by council members that Coover handpicked himself (David Starr Jordan being the most prominent one).[152] It is intriguing to note the rationale for this move: 'The presence of this Society should act as a deterrent to a revival of mediumistic charlatanry, likely to follow the sorrows and grieves of war as it has in England'.[153] This attests to some accurate cultural foresight on Coover's part; as we have seen already, spiritualism would flourish again in the United States in the 1920s as it did in England, and would lead to schisms in the Psychical Research Societies on the east coast.

The Richard Hodgeson Memorial Fund: Psychical Research at Harvard, 1916–1926

Despite the negative verdict on telepathy in what was, from a scientific perspective, the decidedly strongest and most elaborate test ever to have been performed on a psychic phenomenon, Coover had not settled the matter as far as most psychical researchers were concerned. In 1924 a replication attempt was made by a recent PhD graduate from

[149] Coover to Wilbur, April 10, 1918, 1.

[150] Ibid.

[151] Ibid.; Coover to Wilbur and Board of Trustees, November 8, 1918.

[152] Coover to Wilbur, April 10, 1918; see attachment.

[153] Ibid., 1-2.

Columbia, Hulsey Cason, producing the same null result as Coover had: this was published in the SPR *Journal*, but the interest in telepathy continued to linger.[154] A major reason why researchers in the field could choose to distrust these negative studies was no doubt the theoretical elusiveness that characterised psychical research. Coover's experiments had for the most part used ordinary psychology students as its test subject, they could argue, and thus it had only tested the hypothesis that telepathy is a widely distributed and "normal" mental faculty, rather than a rare faculty which is possessed only by certain "gifted" individuals. As we saw, this had been Richet's conclusion already in the 1880s, turning to the rarity thesis when he failed to convince himself that the probability analysis of his own card guessing trials had yielded any satisfactory results. This would however not be an entirely fair objection against Coover, since he had run equally unsuccessful experiments with self-professed psychics, a group where one would expect to find at the very least *some* psychic ability if it existed at all.[155] But even in that case, there would be enough theoretical flexibility for the psychical researcher to avoid despair: there was also the hypothesis that psychic phenomena were not only *rare*, but also *spontaneous* in nature – a suggestion which had been at the basis of some of the first SPR work, and illustrated well in Gurney et al.'s *Phantasms of the Living*. On this hypothesis, any repetitious and tiring run of tests would fail to find the effect, because this kind of setting was a natural inhibition to the phenomenon itself. By analogy, the spontaneity objection could hold quantitative research on telepathy to be as futile as researching the capacity of falling in love by repeatedly exposing a test subject to pictures of attractive persons of the appropriate sex. That line of research might easily come to the conclusion that love is not proven to exist, as it had failed to appear under properly controlled test conditions. Any evidence of it would remain anecdotal.

It is thus no surprise that more research would be carried out in the context of the societies which sole reason for existence was to explore these alleged phenomena. It is perhaps more surprising that it continued within the university setting as well. This, however, was made possible exclusively by more private funding. Stanford was not the only place to have received private money for psychical research: two other American universities, Clark and Harvard, found themselves in a similar position. Clark University

[154] Cason, 'A Simple Test for Thought-Transference'; cf. Mauskopf & McVaugh, *Elusive Science*, 323 n. 33.

[155] Coover, *Experiments in Psychical Research*, 125-143.

had been given a donation by one J. A. Battles, the son-in-law of Joseph Smith – the founder of Mormonism.[156] Battles' will was however quite open about how the money was to be spent, and the university administration, then headed by the grandfather of American academic psychology G. Stanley Hall (1844–1924), got away with simply arranging some public lectures on the topic.[157] In fact, it was this money that would enable Carl Murchison's collaboration with William McDougall and Harry Houdini on the conference 'For and Against Psychical Belief' at Clark in 1926.[158] It would appear that this conference was the most significant result to come out of the Clark money.

Another grant, the Richard Hodgson Memorial Fund, was given to sponsor psychical research at Harvard University in 1912. Unlike the Clark endowment, the Harvard money was specifically tailored to fund actual research; and unlike the fellowship at Stanford, the grant was to be given on an *individual* basis to fund specific projects.[159] Over the years, the Hodgson grant would make three other significant series of experimental work possible. The first sponsored project at Harvard was conducted by Leonard Thompson Troland (1889–1932), in 1916/1917. Troland was an interesting character with a strongly interdisciplinary approach: he earned a BS in optics and theoretical physics at MIT in 1912, and continued to be engaged in physics research while he studied for a doctorate in psychology at Harvard between 1912 and 1915.[160] He was an early supporter of psychoanalysis, and would eventually be the inventor, vice-president and creative force behind Technicolor, Inc.[161] Together with his old physics mentor from MIT, Daniel Frost Comstock, Troland even published a book that

[156] See Mauskopf & McVaugh, *Elusive Science*, 49.

[157] Cf. ibid.

[158] In the foreword to the proceedings, Murchison seems to have referred to this money when he wrote that: 'The President and Trustees of Clark University were favourable to the idea [of the conference], and voted the use of certain funds left to Clark University some years ago for such purposes.' Murchison, 'Preface', vii.

[159] Cf. Mauskopf & McVaugh, *Elusive Science*, 54.

[160] See his obituary in *American Journal of Psychology*: J. G. Beebe-Center, 'Leonard Thompson Troland: 1889–1932', 817.

[161] Ibid.; cf. Troland, 'The Freudian Psychology and Psychical Research'.

included one of the very first expositions of relativity and early quantum theory in the United States, entitled *The Nature of Matter and Electricity* (1917).[162]

Troland's background in physics clearly informed his work in psychology as well. Writing exactly at the time when behaviourism was emerging and winning ground in the United States, Troland's research was oriented towards psychophysiology, reflex-actions, and the analysis of cognitive, perceptual and motor actions in terms of the purely physical interactions involved. In another radical innovation of research methodology, Troland applied this wholly mechanical approach to the study of telepathy. He was even determined to get rid of the possible influence of the *experimenter*, and devised a set of machinery to replace the human factor.[163] This machinery consisted of a 'stimulus field' where a lamp would light up one of two square blocks in a completely randomised fashion. The agent (or "sender") would perceive the light in one room, while the physically separated reagent (or "receiver") would move a switch to try and indicate which lamp had been lit up in the other room. This introduction of mechanical instruments, and the "double blinding" that resulted from removing the experimenter himself, made the experiment even more rigidly controlled and randomised than Coover's had been.[164] As for the results produced, Troland found that his test subjects scored slightly, but significantly, *below* chance expectations.[165] This was in itself considered an interesting result; for example, a systematic error could arise from an *actual* "telepathic" communication gone bad somehow, not unlike the studies of distorted signals that we saw in Warcollier's research. Nevertheless, Troland did not find it interesting enough to warrant further research, and never returned to psychical research after these experiments.

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[162] It was also clearly inspired by the work of J. J. Thomson, whose portrait was included at the beginning of the book. The title alludes to Thomson's popular book form 1904, *Electricity and Matter*.

[163] His experiment design and results were published as Troland, *A Technique for the Study of Telepathy and Other Alleged Clairvoyant Processes*.

[164] Ian Hacking's study of randomisation and control in psychical research does not mention Troland's experiments. Nevertheless, they seem equally important as Coover's, seeing that they were designed only a little later, and introduced an important new feature in the double blind. It is to be noted that double blinds only became usual in medical science as late as the post-war era.

[165] Cf. Mauskopf & McVaugh, *Elusive Science*, 56.

While Troland's research may have been significant on a number of counts, it has largely passed into oblivion, even in the parapsychological literature.[166] A more famous product of Harvard's Hodgson Fund was the trials performed by Gardner Murphy (1895–1979) between 1922 and 1925. Murphy had been a research assistant in Troland's experiments, while he was still doing his MA, and was thus well acquainted with the methods.[167] His own research, however, differed widely, and can be seen as a more conservative approach to the subject than that of his immediate predecessors, both of whom had worked on the methodological cutting edge of experimental psychology. While Troland had implicitly been testing the hypothesis that psychic functioning was widely distributed, and Coover had emphasised it while also testing the rarity thesis, Murphy started from the hypothesis that psychic phenomena are *rare*, and furthermore, that they tend to occur *spontaneously*. His agenda was to establish methods that were able to take both rarity and spontaneity seriously. As he reported in 1926, just as the researches were completed:

> I devoted about fifty per cent of my time during those years [1922–1925] to the search for individuals who claimed to have telepathic gifts, – my theory being that such gifts, if genuine, are rare, and that it is among those reporting extraordinary psychic experiences that experimental results are most likely to be obtained.[168]

Murphy generally selected people who claimed to have experienced strange coincidences involving mental impressions and unconnected external realities. He

[166] On the short term, it received criticism by the philosopher and psychical researcher F. C. S. Schiller ('Review of *A Technique for the Study of Telepathy*'), and was included more favourably in the methodological review written by Coover's successor as Stanford Fellow in Psychical Research, John L. Kennedy, in 1939. The latter only mentioned Troland's study briefly in passing as an example of research that had been designed to exclude various biases, such as mental habits, unconscious perceptual cues, and recording errors. See Kennedy, 'Methodological Review of Extrasensory Perception', 64, 66. In the later historical literature, Beloff's sympathetic survey did not mentioned Troland's work at all, focusing on the (from a pro-parapsychology perspective) "progressive" events only. More curiously, Hacking does not discuss Troland in his otherwise very thorough discussion of developments in experimental design in telepathy research. The best discussion in secondary literature thus appears to be two-and-a-half pages in Mauskopf & McVaugh, *Elusive Science*, 54-56.

[167] Ibid., 60.

[168] Murphy, 'Telepathy as an Experimental Problem', 271.

would then select these subjects for his experiments, which involved tests of the "supernormal" transfer of mental objects, 'especially geometrical figures of various shapes'.[169] In this sense, his design was much more primitive than those of his immediate precursors, looking more like the earlier designs of Warcollier or the Miles-Ramsden experiments, relying on targets that were hard to subject to a fair probability analysis, and which, moreover, lacked the control for "mental habits" that had just recently become customary.[170] Murphy's expressed goal was to 'ascertain the statistical as well as the qualitative analysis' of telepathic and clairvoyant events[171] – in other words to get the best of both worlds when compared to the existing research traditions in psychical research.

Concerning the results, Murphy commented:

> The great bulk of my telepathic work has yielded results closely comparable to those of Dr. Coover; that is to say, the vast majority of subjects give results which offer no difficulties of explanation in terms of coincidences. Some rather marked exceptions remain unexplained.[172]

This statement reveals a fundamental ambivalence in Murphy's experimental approach to psychical research. It indicates that Murphy allowed himself certain irregularities in the interpretation of his data, in order to accommodate the belief that psychic phenomena were unevenly distributed and hard to catch. Thus, a very few "high scoring" experiments are allowed to be seen *separate* from all the runs that were consistent with chance. From a methodological point of view this could easily lead to a form of selection bias, keeping the results that fit with the hypothesis while discarding the ones that do not. In the end, Murphy's struggle to get the best out of two worlds, namely the quantitative and the qualitative, remained unresolved, the demands of one cancelling those of the other.

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[169] Ibid., 272.

[170] I.e., controlling for the possibility that certain shapes suggest themselves more often than others to certain people. Both Coover and Troland had controlled for mental habits, and Coover even published a long discussion of this particular bias. See Coover, *Experiments in Psychical Research*, 230-368.

[171] Murphy, 'Telepathy as an Experimental Problem', 273.

[172] Ibid.

Whatever might have come of it, Murphy's research was cut short when he suffered a series of illnesses following a severe flue in 1925.[173] Murphy's successor at Harvard was George Hoben Estabrooks (1885–1973), who had been one of William McDougall's graduate students at Harvard.[174] It was also McDougall, now a professor of psychology at Harvard, who secured the grant money for Estabrooks to conduct his research while finishing his PhD. McDougall seems to have been a little disappointed with Murphy's achievements, or lack of such, and it is notable that, even as Murphy himself would admit, Estabrooks immediately set out to improve on the methods that Murphy had used.[175] These improvements, however, consisted primarily in making the experiments more similar to Coover's standards. Most importantly, Estabrooks changed the initial selection criteria, now going from the assumption that telepathy was ordinary, and hence accepting much larger samples of subjects. Estabrooks designed experiments that were strictly quantifiable – reverting again to experiments using decks of cards – and introduced more rigid statistical methods. He followed Troland on making use of a degree of instrumentation to avoid the human factor of the experimenter by introducing a telegraphic signalling device connecting the two rooms where the agent and reagents were seated, providing a purely mechanical way to decide when a "transfer" was to take place.[176]

Estabrooks also introduced certain novelties of his own, primarily in the analysis of the data. For example, he conducted three series of experiments, the first one using a group of personal friends as test subjects, while the others used students pooled from psychology classes at Harvard. Estabrooks noted that the first series had been much more successful than the latter ones, even though the method had been the same: his novel suggestion was that the personal relationship with the test subjects created a laid-back attitude that made the subjects less mentally preoccupied with the experimental

[173] Following his illness, Murphy started building a solid career in mainstream psychology, writing two popular volumes, *An Historical Introduction to Modern Psychology* (1929), and *An Outline of Abnormal Psychology* (1929).

[174] Cf. Mauskopf & McVaugh, *Elusive Science*, 66-69.

[175] Murphy, 'Telepathy as an Experimental Problem', 275-276.

[176] For Estabrooks' description of his methods, see 'A Contribution to Experimental Telepathy', 194-197. Cf. Mauskopf & McVaugh, *Elusive Science*, 66-67. Estabrooks' report was first published by the Boston Society for Psychical Research in 1927; after having been out of print for years, it was reprinted in the *Journal of Parapsychology* in 1961. I am quoting from this later reprint.

situation – this, it was suggested, led to a conducive state for telepathy.[177] This assumption led to a second novelty in the *analysis* of such quantitative studies, namely that each run seemed to start off with more successes, and then run into *decline* as the experiments continued. This, Estabrooks suggested, could be a "fatigue effect", meaning that the rapport between the communicating minds gradually disappears as the subjects get bored and mentally tired from too many repetitions.[178] In a sense, this analysis seemed more successful in reconciling the wishes Murphy had expressed; namely, to of uniting the quantitative with the qualitative and give justice to the "spontaneity thesis" without sacrificing in experimental control. It also seemed to imply that larger quantitative studies, like Coover's, would be of little promise.

Estabrooks' research at Harvard is also important in that it was a quantitative, well-designed experimental approach that actually seemed to produce positive results.[179] Particularly his first run, with friends as subjects, had come out very positive.[180] While this no doubt pleased psychical researchers, including McDougall, who even convinced the influential psychologist Edwin G. Boring to support Estabrooks for a while, the situation was now getting increasingly confusing: which studies to trust? What was the final verdict of quantitative experimental work on telepathy? With other well-designed and thorough experiments showing no effect, including in replication studies, it seemed that the only thing Estabrooks really achieved was to once again open the door of possibility for laboratory psychologists interested in psychical phenomena. But the reasons for doubt were equally, if not even better justified.

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[177] Estabrooks, 'A Contribution to Experimental Telepathy', 199-200.

[178] Ibid., 201.

[179] It was, however, methodologically weaker than Coover's on at least two counts that I can see. First, the sizes were a lot smaller than those used by Coover. Secondly, Estabrooks had not been able to do satisfying control runs, such as Coover had. Intriguingly, it appears that McDougall had insisted that Estabrooks did such a control, but it did not happen because his test subjects refused to cooperate: 'On the suggestion of Professor McDougall the writer attempted to retest as many as possible of his former subjects under conditions which would rule out all possibility of telepathy and use these results as a check. Unfortunately the men thought otherwise and would not cooperate. While they were perfectly willing to give a half hour once, they were by no means willing to do so twice much to the chagrin of the operator.' Estabrooks, 'A Contribution to Experimental Telepathy', 205. This means that in practice the null hypothesis was not seriously considered in these experiments.

[180] Cf. Mauskopf & McVaugh, *Elusive Science*, 67.

4 Conclusion: Enchantment and the Reign of Quantity

We started this chapter by noting the disappointments of the first generation of psychical researchers at the dawn of the 20th century. To Henry Sidgwick it had seemed incredible that a couple of decades of organised psychical research should not have managed to bring any certainty whatsoever to even the most basic research questions. What would Sidgwick, Myers, James and the rest have thought, had they been able to witness the next few decades? The Sidgwick circle had been dedicated to salvaging what they thought was useful from spiritualism and occultism, and elevate the sanitised concepts of "telepathy" and "clairvoyance" to the finest levels of scholarship. The first two decades after their passing were characterised by the opposite direction: popularisation rather than the building of expertise, and a return to grass-root spiritualism in place of the careful search for scientific explanations of it. If that was not enough, mediums were now claiming to capture the souls of the first-generation pioneers themselves. Dependent on the bodies of spiritualist mediums to voice their opinions, the old researchers suddenly appeared much more supportive of spiritualism than they had ever been in real life.

I have suggested 1925 as the year when psychical research finally bifurcated into a "progressive" scientific wing, and a "conservative" spiritualistic wing.[181] Before this point, the SPR and its sister and daughter societies across the Western world housed everything from simple spiritualist demonstrations, to purely philosophical reflections, to mildly quantitative experiments with specific effects. By 1925, it had become increasingly clear that to pursue the latter type of strictly scientific research, one had to leave the context of the traditional psychical research societies behind. One reason for this, I suggest, is that the expertise needed to design and conduct scientifically valid experiments and data analysis was getting increasingly sophisticated and specialised.

[181] Please note that I do not intend this distinction in a *political* sense; politically speaking, spiritualists could be socialists while science-oriented psychical researches might just as well place themselves on the political right. A good example of the complexity of the political issue can be found in the next chapter, in the case of William McDougall. The distinction between "progressive" and "conservative" is only meant as a convenient short-hand for two different attitudes to psychical phenomena: one is primarily interested in building a "progressive science" around such phenomena, keeping and systematising the positive evidence, whatever it is and in whichever direction it points; the other is primarily interested in *conserving* the religious and doctrinal content of the spiritualist movement.

Experimentalism was becoming more refined, and the requirements for producing valid knowledge in the human and social sciences were getting more difficult for the amateur to meet. Above all, this reflects the fact that the academic discipline of psychology had become well-established by the 1920s, and characterised by extensive and sophisticated methodological debates that amateurs could not be expected to keep up with. It was, in other words, quite a different situation from the one in which psychical research had first been defined.

Adding to the problem of specialisation, the popular upsurge of spiritualism also led to controversies of a more personal and emotional kind. Post-war spiritualism, responding to the emotional need of a generation of bereaved people, had a curious ability to bridge the popular level and high society. It became difficult to approach the field with scepticism without appearing both elitist (contra the masses) and libellous (contra the bourgeoisie) at the same time. The case of Mina "Margery" Crandon and her bourgeois husband in Boston is an illustrative example: in this case, the very attempt to subject the medium to scientific testing led, when the genuineness was questioned and the hypothesis of fraud suggested, to the split of the American SPR, with the Crandon family and new SPR leadership actively curtailing critical voices.

While the field was fragmented at large, the "camps" themselves were also far from unified. The "conservative" wing remained necessarily heterogeneous, allowing the curious exploration of anything that seemed remotely supernormal as long as true scepticism was kept at arm's length. The "scientific" wing, however, needed a larger degree of unification if it was to hope for any kind of progress. This was not so easy. The tendency among the scientifically oriented was clearly to abandon the controversial and perpetually unfruitful study of mediumship, and focus instead on specific effects, capable in some degree of being isolated and tested separately under laboratory conditions. They tended to favour the quantitative methods over qualitative ones, although sometimes the boundaries between the two were blurred. However, even when the séance room was replaced by the psychology laboratory, several fundamental questions remained to be answered: are supernormal faculties rare or common? Can they be reproduced at will, or do they happen spontaneously? What kinds of supernormal faculties are there, anyway? What are the most likely *normal* explanations, and how can they be adequately checked for? The answer to each of these questions had a bearing on how experiments should be constructed. No matter which choice was

opted for, the results yielded, whether positive or negative, could always in principle be questioned by researchers who answered the initial questions differently. The result, as we have seen, was that even within the strictly quantitative research tradition– spanning the contributions of Richet, Warcollier, Coover, Troland, Murphy, and Estabrooks – no straight-forward "progressive" course can be traced. Instead, fundamental questions are brought up time and again, with an endless return to the main fundamental hypotheses.

We could expect that at least in *research design* there might be some sort of "progress" to trace, but even here the matter is not clear-cut. The fundamental difficulties with using probability and control correctly were brought up already in the 1880s by people such as Richet, Edgeworth, and Peirce; yet in the twenty years that followed there is little trace of their insights having any real impact on actual research design. Coover appears as the first psychical researcher to truly take these insights seriously, while meticulously adding ways to implement controls and randomisation in the experimental situation. His work was well received in the psychological literature, and influenced some of the very few professional psychologists who ventured into psychical research in the coming years, notably Troland in 1916/1917 and Hulsey Cason's 1924 replication attempt. Since these studies were generally negative with respect to the anticipated effects, there could be no more psychical research on these lines. Thus, it was not long until the fundamental questions were asked once again, with Murphy going back to the rarity thesis, scrapping Coover's strict controls, and focusing on spontaneity. Estabrooks mediated between the two, producing positive results if a *spontaneity* thesis was assumed, but with a somewhat weaker methodology than Coover's.

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The pattern that emerges is clear enough: the stricter the methodology, the weaker the results. To researchers who had not invested any personal prestige in the *veracity* of psychic events, such as Coover, the most obvious conclusion to draw was that the phenomenon itself was likely to be spurious – an illusion created by the attribution of meaning to random patterns. Coover's own research into the illusions of perception created when listening to nonsense syllables was an excellent demonstration of this

hypothesis.[182] That evidence for telepathy disappeared when tests were repeated would, from a statistical point of view, appear as a simple application of the law of large numbers. It was comparable to the normal tossing of a coin: do it ten times and you may see a preference for heads, do it 10,000 times and the preference drowns in the average value. Those who were not ready to embrace this conclusion, including Murphy and Estabrooks, still had other strategies available. These largely depended on defining the phenomena in ways that made them impossible to measure by strict applications of quantitative experiments: only a unique type of individuals should be used as subjects, for example, or the spontaneous quality of the effects should be recognised. Researchers like Murphy and Estabrooks attempted to get the best of these two worlds; the question, however, is whether those worlds are at all reconcilable. Taking the uniqueness of the phenomenon seriously, both in terms of confining the "gift" to a very few "special talents", and by emphasising the spontaneity of the events themselves, makes both standardisation and replication of experiments close to impossible in practice. Considering that psychological research methodologies were becoming stricter every day, this meant that it would be very hard to be taken seriously from a scientific point of view.

It was precisely with reference to this apparent "paradox"[183] that Carl Gustav Jung, following his collaboration with Wolfgang Pauli (and, to a lesser extent, Pascual Jordan), would later suggest that psychic phenomena are what he called *synchronistic* events.[184] On this reading, psychic events are non-causally connected "meaningful coincidences", and one would expect them to be very hard to produce on demand in a laboratory. Since synchronicity focuses on "meaning", with Jung even admitting to its 'anthropomorphic' character,[185] the synchronistic view of experiments on telepathy is in fact not so far removed from the "sceptical" one: meaning is only possible in "unique" situations, and will disappear with quantity. The difference is, of course, that Jung would not *reduce* this meaning dimension to something illusory, but instead establish the principle of acausal, meaningful connections as an irreducible feature of nature. With

[182] Coover, *Experiments in Psychical Research*, 369-410; cf. Joseph Jastrow, *Fact and Fable in Psychology*.

[183] Paradoxical, perhaps, to the believer in psychical phenomena: the disbeliever sees no paradox in these tensions, only what one would expect on the hypothesis that the phenomena do not exist.

[184] See e.g. Jung, 'Synchronicity', 14-19, *passim*.

[185] Ibid., 69.

the input of Pauli, he even suggested an analogy between telepathy experiments and quantum mechanics: the "uniqueness" of quantum mechanical processes and their fundamental indeterminacy was indisputable; yet, physics at large was safe because order and lawfulness emerges from quantity on the macro-level.[186]

In conclusion, the collision between quality and quantity appears as the most serious *scientific* problem faced by second-generation psychical research. The problem becomes even more evident when we consider psychical research programmes as "laboratories of enchantment", bent on studying precisely those natural, human, or spiritual phenomena that seemed to run counter to the "disenchanted" world picture that had been propagated by certain late-19th century popularisers of science. Whether they corroborated spiritualism's claim of the existence of disembodied spirits, or suggested simply that non-mechanical powers of the mind were operative across great distances, psychic phenomena promised more life, more agency, more meaning, and mystery in nature than "classical" physics, mechanistic biology, and Daltonian chemistry had to offer. Putting them on a solid scientific footing therefore bore the promise of overturning disenchanted naturalism. Those seeking genuine enchantment through a science of the supernormal were, however, faced with a serious dilemma. Through the early decades of the 20th century it became increasingly clear that such a science had to play by the rules of *quantity*. To be taken seriously in a scientific context, studies of psychic phenomena had to go through experimental control, randomisation, statistics and probabilities. Anything personal, situated, and subjective had to be removed – that was the only way from unreliable "anecdotes" to reliable "data". However, while science was a quantitative endeavour, psychic experiences appeared to be of a qualitative nature. As studies piled up, it became hard to avoid the conclusion that whatever else they might be, "psychic phenomena" were of an essentially subjective character. One could opt to interpret this subjectivity as indications of bias and personal meaning-making, or as expressing a genuine "spiritual tease": phenomena that, in the style of William James, were intended to 'remain *baffling*, to prompt our curiosities and hopes and suspicions all in equal measure'.[187] In either case, the laboratories of enchantment were looking in the wrong place when attempting to quantify the unique. The consequence would be that no scientifically legitimate psychical research is possible.

[186] Cf. Gieser, *Innermost Kernel*, 289-298.

[187] James, 'Final Impressions of a Psychical Researcher', 175.

The project would be forced to return to puzzles over anecdotes and personal experiences; at best, it could survive as a hermeneutics of supernormal experiences rather than as a science of supernormal experiments.[188]

Given such harsh verdict, one might think that McDougall and other anti-agnostics in psychical research would have gotten their final answer: the methods of psychical research had now been tried and tested, in accordance with a variety of hypotheses and methodologies, but results were not forthcoming. Perhaps it was time to close the book and conclude, now with *weighted evidence* rather than by a priori reasoning, that the supernormal constitutes a genuine case of *ignorabimus* – something that, if genuine at all, we *cannot* know scientifically.

No such verdict was passed. In fact, the decidedly largest programme in experimental psychical research was still to come, and McDougall himself would play a decisive role in bringing it about. In 1934, less than ten years after the international schisms, a book appeared that would finally succeed in becoming the "paradigmatic" foundation text for a professionalised, parapsychological "normal science": Joseph Banks Rhine's *Extra-Sensory Perception*. This book introduced yet another new set of scientific nomenclature, made a new taxonomy of effects, described methodological protocols, provided fresh interpretation of earlier research, and, above all, presented the results of years of quantitative experiments that seemed to yield an overwhelmingly *positive* verdict. Furthermore, the research it presented had been funded through a university budget, carried out in the psychology department of the newly established Duke University in North Carolina. The second generation's long and disappointing search for a paradigm was finally over. Rhine's work ushered in the third generation, which became the generation of *professional parapsychology*. Given the extraordinary history of failure we have just described, and the increasing certainty by which

[188] This, in fact, would come close to the position taken more recently by historian of religion Jeffrey Kripal: 'paranormal phenomena are semiotic or hermeneutical phenomena in the sense that they signal, symbolize, or speak across a "gap" between the conscious, socialized ego and an unconscious or superconscious field'. What precisely is meant by this "superconscious field" remains unclear. The form of hermeneutics imagined by Kripal appears deeply inspired by a psychological (or even "psychical") approach on the lines of Myers and Jung, while also drawing inspiration from the phenomenological school in the history of religion, particularly Mircea Eliade and Ioan Couliano. See Kripal, *Authors of the Impossible*, 1-34, 25.

professional psychologists could disregard psychical research after Coover, how could this happen? This is the question we must turn to next.

9

Professionals Out of the Ordinary: How Parapsychology Became a University Discipline

> [T]he allies that a science must find in order to become exact …, of which the science is sometimes ashamed, are almost always outside the magic circle by which it later, after its victory, redefines itself.
>
> Bruno Latour, *The Pasteurization of France*, 59-60.

INTRODUCTION: HOW TO BECOME A SCIENTIST WHEN YOUR FIELD DOES NOT EXIST

At the close of the 1920s it seemed extremely unlikely that psychical research would ever be endorsed by a university, much less that resources would be granted to hire full-time faculty researchers, furnish laboratories, and even teach graduate students. Yet, this was about to happen. In the early 1930s the young psychology department at Duke University, North Carolina, would be home of a new set of experimental trials, conducted mainly by Joseph Banks Rhine (1895–1980), a botanist who had turned his interest to psychical phenomena a few years earlier. Rhine's research at Duke grew into a full-blown research programme in what was about to be called parapsychology. By the end of the 1930s it would have its own peer-reviewed journals, and produce its own PhDs. For the first time, psychical researchers could call themselves professionals.

Keeping in mind the fragmentation of the 1920s, seeing no essential agreement among psychical researchers and a gradually more justified scepticism from academic psychology, this development looks very surprising indeed. How could it happen? While historical accounts of modern professional parapsychology typically start with Rhine as the founder, I suggest that we can only understand the establishment of parapsychology by looking at the activities of his supervisor, William McDougall. As I will argue in this chapter, it was McDougall who laid the foundations for the professionalisation of

psychical research.[1] How did he do it? Before we can start to answer this question we must be clear about what the challenge consisted in to begin with.

There were primarily two problems barring psychical research from becoming a professionalised discipline in the 1920s. The first of these was the "science internal" challenge that concerned us at length in the previous chapter: no compelling evidence, acquired with sound methods and capable of replication by others, had come to light after two generations of research. Even the best scientific reasons for giving the field attention were whimsical, elusive, and open to dispute. I have described this situation as a "non-paradigmatic" state: psychical research lacked a paradigm that made progressive "normal science" possible.[2] The lack of a paradigm in this sense was a serious problem for anyone who wished to argue that psychical research belonged in the university.

The second challenge faced by psychical research was of an *externalist* character. The very production of paradigms entails more than just establishing some internally consistent rational component: it also entails a *social* process embedded in a larger cultural context. To be effective, "paradigms" in the narrow sense[3] must be shared by a community; while appeals to reason and good arguments will no doubt be important in the discourses that result in the acceptance or rejection of specific paradigms, the process in which that happens is itself essentially social. In these processes the narrow sense of "paradigm" links up with the second, broader sense identified by Kuhn: paradigms as a set of shared beliefs, attitudes, and worldviews.[4] Linking these points together, psychical research needed to show not only that it possessed an internally consistent rationality, but also that it had a legitimate space within this broader structure of scientific, philosophical, cultural, and even political, concerns. It had to be justified by a broader socio-cultural paradigm. I shall argue that it is on this externalist level, rather than on the internal level of the discipline's "rationality", that we must look for an explanation of psychical research's eventual professionalisation.

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[1] I first put forward this argument in an article published in the *Journal for the History of the Behavioral Sciences* in 2010: see Asprem, 'A Nice Arrangement of Heterodoxologies'. The second section of the chapter is built on that article.

[2] E.g. Kuhn, *The Structure of Scientific Revolutions*, 10-51; cf. idem, 'Postscript – 1969', 187-191.

[3] I.e. as authoritative exempla to be followed in scientific "puzzle-solving", as explained in the previous chapter.

[4] Kuhn, 'Postscript – 1969', 181-187.

Taking a cue from the sociology of science, any discipline seeking professionalisation needs to successfully manage two sets of social strategies. On the one hand, the successful professionaliser must differentiate his or her field from competitors and answer to possible critics, through strategies of "boundary-work".[5] On the other, one has to build networks and enlist significant allies, both in the form of influential persons and by taking part in significant discourses of broader public appeal.[6] The latter is needed both in order to ensure continuity and to persuade significant others. It can be argued that all previous attempts at establishing psychical research ultimately failed in one or both of these two concerns. For example, the SPR was originally quite successful because it managed to keep firm boundaries against "unscientific" spiritualists, and build a very significant network of members and allies in fields ranging from the sciences to politics, reaching all the way to 10 Downing Street.[7] The fragmentation that followed in the second generation can thus be conceptualised as a collapse of the SPR's boundary-work with the influx of spiritualism, and a partial collapse of its network, with the death of the influential founders. The death of founding fathers were, as we have seen, central in the fall of several other psychical research societies as well, most notably Schrenck-Notzing's Munich laboratory, and the IMI in Paris.

This provides a framework for understanding the role of McDougall: my argument is that McDougall finally succeeded, both in erecting strong boundaries against competitors and other threats to the field's legitimacy, and in networking the field to a number of highly relevant social, political, and scientific concerns. In the first and second section of the present chapter, we shall look at how this was done. Who

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[5] Here I am referring to the concept developed by Thomas F. Gieryn, 'Boundary-Work and the Demarcation of Science from Non-Science'; idem, 'Boundaries of Science'; idem, *Cultural Boundaries of Science*; and expanded by David Hess, *Science in the New Age*.

[6] This point is inspired by the actor-network theory, in particular as developed by Bruno Latour, *Science in Action*; idem, *We Have Never Been Modern*; idem, *Pandora's Hope*; idem, *Reassembling the Social*. For relevant reviews of actor-network theory, see John Law and John Hassard, *Actor Network Theory and After*.

[7] Arthur Balfour resided in number 10 at the turn of the century, and inaugurated an unbroken tradition of British Prime Ministers living there when he assumed office in 1902. Henry Sidgwick dined with Balfour in 10 Downing Street the night before he underwent unsuccessful surgery for cancer in May, 1900. He died three months later. See Gauld, *Founders of Psychical Research*, 315.

were the enemies, who were the allies, and what were the arguments? The first section will deal primarily with arguments defending the scientific legitimacy of psychical research, defending it against spiritualists, on the one hand, and sceptical voices from the academy, on the other. In the second I will continue to focus on the networking aspect: why was psychical research important? How could it contribute to science, society, and policy making? As we shall see, McDougall's arguments for the field's relevance made certain links that will look surprising when viewed with contemporary eyes. He appealed to scientific fields that were controversial even in the 1920s – including the Lamarckian theory of evolution and the science of eugenics – but whose political impact factor was undeniable. In the end I shall argue that it was precisely by knitting psychical research into a broader network of discourses with clear political, social, and also *religious* implications that McDougall finally succeeded in making room for the discipline in a university setting.

While McDougall laid the foundations and secured the institutional space, it was J. B. Rhine who finally filled that space with new lines of research that would become paradigmatic (in the narrow sense) to a new and professionalised disciplinary formation. In the third section, we shall have a look at Rhine's work – both from an internalist and an externalist perspective. How did Rhine's research relate to the quantitative research projects of his predecessors? With McDougall passing away in 1938, what were the strategies available to Rhine for defending and advancing the programme? In particular, we must look at how Rhine's research was first *received*, how criticism was responded to, and not least, what he did to maintain the momentum that the discipline had suddenly gained in the mid-1930s.

By appreciating both the internal and external factors of disciplinary formation, we are finally in a position to understand the emergence of professional parapsychology in the 1930s. I will, however, conclude the chapter by suggesting that the case of parapsychology also has a deeper significance: it tells us something about the state of the academy as such during the period in question. Returning to the problem of disenchantment, I argue that McDougall and Rhine's strategies to enforce parapsychology's status were also a grand-scale mobilisation of "scientific" discourses of *enchantment*. Since universities have typically been seen as bastions of disenchantment, this is an important point: the professionalisation of parapsychology presents us with the case of a discipline finding room in a university not *despite*, but

because of the challenge it posed to disenchantment. I shall argue, however, that this was only possible due to the very specific cultural and political circumstances in which the events took place.

1 Against Agnostics, Sceptics, and Spiritualists: The Boundary-Work of a Conservative Contrarian

We have already met William McDougall a number of times in the course of this study. We have seen that he was a leading psychologist of his generation, with a characteristically philosophical approach and a broad interdisciplinary vision, combining physiology and biology with psychology and mental philosophy. He had partaken in the Cambridge anthropological expedition to the Torres straits in 1898, as a physician and psychologist, while still in his twenties.[8] His extremely successful textbook, *An Introduction to Social Psychology* (1908), helped define a generation of psychologists. Other publications attest to broad interests and erudition, as well as a distinctly philosophical style of working and a continuous interest in "Big Questions". *Body and Mind* (1911) was a fresh attempt at addressing the old philosophical dilemma of mind/body dualism, discussing the relation between mechanism and teleology from a variety of philosophical and scientific perspectives. This book also included references to psychical research as supporting evidence for McDougall's own dualistic thesis. Another major work, *The Group Mind*, was published in 1920, and was a significant contribution to the then popular field of "crowd psychology".[9] No doubt, this field was seen as particularly relevant at a time when modern democracy was still in the crucible, new mass-movements turned revolutionary, and cults of personality were rising from the passions of the people. Notably, McDougall speculated that psychical research might help explain some of the phenomena of crowd psychology: it could be, he argued, that

[8] For the scientific outcome of this expedition, see e.g. Richards, 'Loss of Innocence in the Torres Straits'. For the report, published much later, in 1912, see Charles Hose, William McDougall, and A. C. Haddon, *The Pagan Tribes of Borneo*.

[9] This was already an established field of inquiry, however, and the biggest classic was already more than two decades old: Gustave Le Bon's *The Crowd: A Study of the Popular Mind* (1896; original *La psychologie des foules*, 1895). Freud's critique of Le Bon, however, only appeared after McDougall's comprehensive volume, in 1921. See Freud, *Group Psychology and the Analysis of the Ego* (German original: *Massenpsychologie und Ich-Analyse*).

faculties such as telepathy were involved in the rapid spread of popular sentiments that were seen during revolutions.[10] His work on *The Group Mind* was however also deeply infused with scientific racism, embodied in ideas about the "group minds" of nations, the formation of mental "characteristics" of different racial groups, and their relative worth and sophistication.[11] Throughout the 1920s, McDougall increasingly appeared as a public intellectual, mixing his role as scientific professional in the field of psychology and his broad knowledge of other academic fields with an interest in ethics, politics, and moral problems, to produce numerous books on matters of broad public interest.[12]

McDougall had, in short, played a crucial role in the formation of British psychology over the first two decades of the 20th century; he had occupied positions at both Cambridge and Oxford, and worked as an explicit counterweight to the popularity of Freud and the psychoanalytic movement.[13] When he emigrated to the United States in 1920, McDougall already possessed something of a guru status among psychologists in England. In stark contrast to his reputation and status at home, McDougall's years in America have been described rather as 'a slow, if colourful, downward spiral'.[14] Part of the downward spiral can be explained by changing tides in the theoretical superstructure of psychological research, especially in the United States. As seen in chapter five, McDougall was deeply involved in countering the new and fashionable current of behaviourism. But the biggest problem was self-inflicted: McDougall had a great appetite for controversial topics and contrarian views, and possessed a poorly hidden elitist spite for the masses. This earned him the epithet of 'an American

[10] McDougall, *The Group Mind*, 28-30. While he considered this option, it should be noted that he did not in the end find it a very attractive hypothesis to explain the spread of emotions in crowds.

[11] The book had chapters on topics such as 'The National Mind and Character', 'The Will of the Nation', and a discussion of 'Nations of the Higher Type'. For the whole section on national characteristics, see ibid., 96-199. Later chapters focused on the 'Race-Making' periods of a population group's history, and the 'Progress of Nations'. Ibid., 208-245, 270-301.

[12] Of these we could mention the provocative *Is America Safe for Democracy?* (1921), *Ethics and Some Modern World Problems* (1924), *Character and the Conduct of Life* (1927), *World Chaos* (1931), *Religion and the Sciences of Life* (1934), and *The Riddle of Life* (1938). Some of these works will be discussed later in this chapter.

[13] A collection of McDougall's criticisms of Freud and psychoanalysis, mostly published from the 1920s onwards, is found in McDougall, *Psycho-Analysis and Social Psychology*.

[14] Richards, 'Defining a Distinctive British Psychology', 655.

Nietzschean reactionary' in the press, a characterisation that he appears to have worn with some pride.[15]

It may, however, be overly present-centred to insist that McDougall's 'colourful' endeavours were *doomed* to failure. In the battle of behaviourism, for example, he posed a serious challenge for James B. Watson, and even won the public debate between the two that was hosted by the Psychology Club in Washington in 1924.[16] All of the debates he entered into were deemed to be of great importance at the time, and their outcome seemed far from clear.

* * *

McDougall arrived in Boston in 1920 to take up the prestigious professorship in psychology at Harvard previously held by William James and Hugo Münsterberg. The following year, he was made president of the American SPR. He could hardly have entered American psychical research at a more critical juncture: this was a time characterised by the resurgence of spiritualism, and an internal polarisation of its leading members, which was about to tear the ASPR to pieces. McDougall came to have a decisive impact on the outcome of the raging controversies. His actions as president strongly underscored the on-going bifurcation of the society. McDougall had little patience for spiritualist mediums or public demonstrations of their alleged powers, and sided clearly with the scientific wing of the ASPR. One of his first acts as president was to establish an Advisory Scientific Council, which included well-known sceptics such as Joseph Jastrow, John Edgar Coover, and Leonard Troland.[17] Moreover, McDougall was not afraid of voicing his position in his capacity as president of the society, warning its members explicitly against flirtations with spiritualism. In his presidential address in 1922, McDougall opened bluntly, stating that 'I have no message to bring you assuring you of the continued existence of the friends you have lost'. To this he added a sarcastic

[15] He mentions the incident in the foreword to McDougall, *Ethics and Some Modern World Problems*, viii. It refers to the reception of his controversial and provocative book, *Is America Safe for Democracy?*, published just after he came to the United States, in 1921. See also my discussion in the next section. For two earlier brief studies of McDougall's public reception in the American period, see R. A. Jones, 'Psychology, History, and the Press', Carlos Alvarado & Nancy Zingrone, 'William McDougall, Lamarckism, and psychical research'.

[16] See McDougall, 'Postscript [1927]', 87; cf. McDougall & Watson, *The Battle of Behaviourism*.

[17] Mauskopf & McVaugh, *The Elusive Science*, 19.

pointer to the spiritualists, remarking that if he had known any such message, he would rather 'fill Symphony Hall and charge each of you five dollars for the privilege of hearing me speak'.[18]

Already the following year, in spring 1923, the board of trustees of the society had grown displeased with their president's confrontational style. Quite unexpectedly, they overthrew McDougall's presidency and instated the reverend Frederick Edwards in his place.[19] The new leadership was directly opposed to McDougall's scientific profile, and took steps to reverse his policies; Edwards' first acts as president included seizing control of the ASPR's publishing activities, and disbanding the Scientific Council that McDougall had just established. The following year saw the beginning of the Margery affair. As far as claims to scientific credibility are concerned, that affair would become the proverbial nail in the coffin for the ASPR, motivating the final schism of 1925. From that point onwards, the alternative Boston Society (BSPR), founded by Walter Franklin Prince, became the standard bearer of scientifically oriented psychical research in America. Over the years to come, Prince and the BSPR would spend much time polemicising with the ASPR, and in particular with its pro-spiritualist research officer and previous editor of *Scientific American*, J. Malcolm Bird.[20] Apart from providing an alternative, pro-scientific voice, the BSPR did not accomplish much, however. It finally withered away with the illness and death of its founder in 1934 – a fate not uncommon among psychical research societies.

Parallel to the polemic between the spiritualistic ASPR and the science oriented BSPR, McDougall continued the campaign that he had begun during his short term as ASPR's president. Seen as an act of double boundary-work, McDougall's polemic was not only directed at the spiritualist sympathisers in the ASPR; he also attacked the established university disciplines. In particular, McDougall sought to penetrate the epistemic boundaries built around the university system, and claim a space for psychical research within it. This led him to open up fundamental questions concerning

[18] McDougall, 'The Need for Psychical Reseach', 51. If we measure by relative income value, which takes into account changes in GDP per capita, a commodity priced at five dollars in 1922 would be equal to a price of $351 in 2010. Figures are obtained through www.measuringworth.com (accessed March 23, 2012).

[19] Mauskopf & McVaugh, *The Elusive Science*, 19.

[20] Cf. the discussion in chapter eight. See Prince, 'A Review of the Margery Case'.

epistemology, particularly the concept of agnosticism as a scientific guiding principle, as seen in chapter seven, but it also led him to address the social and educational duties of a modern university.

To appreciate the space McDougall tried to claim for his version of psychical research, we must have a closer look at some of his lectures directed at audiences comprised of psychical researchers and spiritualists, on the one hand, and academics with a general interest in the field, on the other. Two lectures are particularly important in this respect: the 1922 Boston lecture, and his 1926 lecture at the conference "For and Against Psychical Research" held at Clark University. Proceeding chronologically, I will begin with an examination of the former. The Boston lecture was entitled 'The Need for Psychical Research', and was primarily addressed to those 'intelligent people' who were, for various reasons, *indifferent* to organised psychical research. McDougall proceeded to divide this audience into three groups:[21]

1) The *deniers*: Those who flat out deny that there can be anything in it ('opposed to or indifferent'). This category included people like Houdini and like-minded committed sceptics and debunkers.
2) The *agnostics*: Those who profess to have no specific conviction one way or the other, but do not see why they should invest their time in psychical research. McDougall held this to be the largest group, a "silent majority".
3) The *convinced*: Those who have developed a personal conviction of the reality of certain psychical phenomena, and since lost interest or become directly hostile to the critical investigations of organised psychical research. McDougall obviously had the spiritualists in mind, and used Conan Doyle to metonymically denote the whole group.

These three groups represented major targets for McDougall's campaign: the "deniers" were *external* Others, who had to be fought off and defended against, while the "convinced" spiritualists were *internal* Others, threatening the professionalism of the field from within by spreading unscientific attitudes and jeopardising the credibility of their more scientific companions. The "silent majority" did not pose a threat that needed

[21] McDougall, 'The Need for Psychical Research', 52-62.

to be countered, but if its indifference could be changed into enthusiasm it could become a powerful ally for psychical research. For now I will silently pass over the arguments designed to entice this group, and focus on McDougall's showdown with his enemies.

How did McDougall try to convince his audience that committed sceptics and spiritualists were both wrong? Against the hard-nosed sceptics, he used arguments resonant with what is considered good scientific conduct.[22] A true man of science, McDougall argued, is obliged to scrutinise all opinions held by sophisticated people, even popular opinions. This is especially important if such opinions go *against* commonly held scientific claims. If such claims are based on flawed reasoning, insufficient or erroneous data, superseded or disproved theories, then scientific men are obliged to refute them in public, and show the people *why* they are wrong. This was clearly an educational point: academics have the duty to fight ignorance, enlighten the people, and disseminate proper, quality-controlled knowledge. But there was also a point to be made about research practice: it is considered good scientific conduct to test one's theories against the best available counter-evidence, indeed to systematically *seek out* such disconfirming evidence. McDougall was certainly not alone in holding that psychical research, if there was anything in it, challenged current scientific models in a broad range of fields, from physics to psychology. Finally, McDougall appealed to the "adventurous spirit" characteristic of cutting-edge research: great discoveries often come from the study of obscure and, as of yet, mysterious corners of nature. Even if some of the phenomena that psychical research concerned itself with would turn out to be explicable through completely "disenchanted" theory, they may still give us new and useful knowledge, whether in the sciences of life and mind, or in the physical sciences. In summary, McDougall attempted to negotiate the borders that had been drawn around the scientific enterprise by arguing that it is really in science's own interest to take psychical phenomena seriously. Whether or not the phenomena will be found to be authentic was less important; the crucial thing was to not reject a whole field of research out of hand.

The attack on convinced spiritualists was perhaps the most important aspect of McDougall's 1922 polemic.[23] It can be seen as an exercise in internal boundary-work,

[22] Ibid., 52-54.

[23] Ibid., 60-63.

aimed at exorcising elements in the field that were deemed to be a liability. The polemic McDougall launched aggravated pre-existing internal differences, and it was no doubt a factor leading to the ASPR's organisational schism two years later. Looking at the actual arguments advanced, McDougall's main problem with the spiritualists was their strong and apparently unshakable conviction, which appeared dogmatic and wholly counterproductive. This state of dogmatic conviction, he observed, had led many who had started out with an attitude of curiosity to develop a direct hostility to scientific psychical research, which they would now, in their newfound spiritualistic piety, regard as impudent. The internal threat posed by dogmatic spiritualists was in fact cast as the most serious obstacle to psychical research:

> This attitude of impatient hostility on the part of such persons is one of the greatest difficulties in the path of psychical research. For experience shows us that, of all those who enter upon the path of psychical research, a considerable portion become lost to it, by passing over into this hostile camp. Having become personally convinced of the truth of the main tenets of spiritualism, these persons cease to be interested in research and devote themselves to propaganda. It is only too probable that many of those present in this room are inclining to follow this course, that they are hesitating between psychical research and spiritualist propaganda.[24]

If they were so strongly convinced of the authenticity of psychical phenomena, McDougall argued teasingly, then surely they should have nothing to *lose* by submitting their beliefs to critical inquiry. If their favourite mediums were indeed able to do what they said they could, then the only effect of scientific investigation would be to dispel doubt and gain legitimacy. Indeed, they too should have everything to win by sympathising with psychical research's tireless pursuit of whatever evidence there is for spiritualist claims. Moreover, in an age when organised science had become very powerful and authoritative, it was only by getting it to acknowledge the reality of such phenomena that they could become fully, and legitimately, established as truth in society at large. Any way one looked at it, professional scientific recognition would be the only sensible way to go. However, McDougall cautioned: if the claims, properly investigated, turn out to be *ill-founded*, then the scientifically minded spiritualists would

[24] Ibid., 60.

be committed to accept the verdict with eyes wide open, and help spread the message that there was nothing in it. From the scientific point of view, this would be a matter of intellectual honesty, pure and simple.

* * *

The divisive Boston lecture was, in the end, a call for organised, scientific psychical research on a big scale with the aim of convincing a group that was getting ever more significant in modern society: the professional scientists.[25] McDougall picked up on this track in his 1926 lecture at the conference "For and Against Psychical Research" at Clark University. The speech was directed at a university audience, and urged that psychical research be accepted as a proper university discipline. It included polemical, but on the whole reasonable, attacks on established scientific disciplines, intended to show that psychical research could be just as good at the shaky game of science as any other currently existing discipline. McDougall's main strategy in the apologetic defence of his field was to propose three main areas in which a modern university is supposed to perform, continuing to show how a professionalised psychical research could either do just as well, or even *outperform* the established disciplines at these tasks. The three areas were education, the forming of public opinion, and research.[26]

The function concerning education would be eminently fulfilled by the amount of critical *methodological* training that McDougall envisaged for a professionalised psychical research. Anticipating a fundamental accusation, he denied that a discipline of psychical research would be founded on a lack of critical sensibilities, leading to irrationalism. Quite to the contrary, McDougall argued that proper, scientific psychical research demands such amounts of critical thinking, reflection over presuppositions and limitations of observation, demonstration of knowledge, experimental control, etc., that it is especially *well*-suited as a university discipline.[27] This would make it eminently suited to fulfil the function of "education", teaching students scientific methodology and critical thinking skills that were becoming ever more important for a modern university. McDougall was in fact making a point that was much more valid than most critics of

[25] Ibid., 62-63.

[26] Or exerting 'a controlling influence in the formation of public opinion on all vital matters', as he put it. McDougall, 'Psychical Research as a University Study', 152.

[27] Ibid., 150-151.

psychical research have been willing to concede, whether in the 1920s or later. As discussed at some length in the previous chapter, the experimental pursuit of psychical research *has* played a valuable role in the history of scientific methodology, particularly when it comes to experimental design and data analysis based on probability calculus.[28] That the most enthusiastic proponents of the field chose to disregard the innovations is another matter; McDougall's claim that a *properly conducted* discipline of psychical research could have provided excellent opportunity to educate students in intriguing questions of scientific method is hard to deny.

The second point, of exerting an influence on the formation of public opinion, was intimately linked to some of the arguments produced already in the 1922 Boston address: the university, as the truth institution *par excellence* in modern society, has a responsibility to provide the public with qualified information on any popular topic. Mediums, ghosts, clairvoyance, telepathy – the whole gamut of psychic phenomena – were clearly popular and controversial topics: people had an insatiable hunger for them, and seemed ready to believe in anyone who claimed to provide testimony from the other side. The university had clearly not taken its responsibility seriously in this matter; with no academic expertise, the people were thus left to believe any amateur telling secrets for a fee. Even if psychical research would come up with a negative verdict concerning the genuineness of such phenomena, a specialist department would be able to provide qualified opinions to the people, McDougall reasoned.[29]

This leaves the third and arguably most important function of a university: research. This part was more difficult to defend, since even McDougall was forced to admit that psychical research seemed completely barren if judged from the empirical and theoretical breakthroughs or practical applications it had produced after nigh on forty years of existence. He had no clear results to show for it, and instead steered the discussion toward more fundamental questions: epistemology, agnosticism, and the philosophy of science. McDougall started by defending against unremitting scientific sceptics with a standard version of the problem of induction: even if results have not been forthcoming so far, there is nothing *a priori* that prevents a possible breakthrough in the future. The white crow might still be out there. This argument was, perhaps, not too convincing after decades of relatively unsuccessful organised hunts for white crows,

[28] Cf. Ian Hacking, 'Telepathy'.

[29] McDougall, 'Psychical Research as a University Study', 160.

black swans, and frankly just about any odd bird one might have spotted. McDougall, however, followed this line of argumentation all the way, ending with a full-scale attack on the agnostic ideal of scientific inquiry. Even an assertion that no knowledge was possible was construed as an "inductive generalisation" for which there could be no real support. We already quoted from this part of McDougall's lecture in chapter seven, in the context of psychical research's discourse of anti-agnosticism. McDougall argued that the opposition to psychical research on what he claimed to be *a priori* grounds was nothing but a 'narrow and dogmatic ignorance, that higher kind of ignorance which permits a man to lay down dogmatically the boundaries of our knowledge'. He furthermore added that such "dogmatic agnosticism" was 'apt to masquerade as scientific humility, while in reality, it expresses an unscientific arrogance and philosophical incompetence'.[30] Below its impeccable surface, "dogmatic agnosticism" is revealed as being a *less* scientific principle than a more open-ended, empiricist program of psychical research would be – a program that acknowledges the question of where to draw the boundary of possible knowledge to be *itself* an empirical question that cannot be settled by *a priori* arguments. Read this way, "dogmatic agnosticism" actually succumbs to a mild kind of *supernaturalism*, in that it holds some types of (claimed) phenomena to be beyond the pale of any empirical inquiry. The question of their existence would then be left to faith alone – a decidedly unscientific attitude.

We have previously seen how this line of argumentation belongs to a broader struggle to define the episteme of scientific naturalism. In this respect, McDougall stood in a longer tradition which goes back to the work of Frederic Myers, James Ward, and F. C. S. Schilller, and further to mid-Victorian attempts to open naturalism up to include spiritualism within the domain of the "natural".[31] Here, however, we should point out that this anti-agnosticism also functions as a strategy of boundary-work. There is something ironic about this, seeing that agnosticism had originally been formulated precisely in a context of boundary-work itself, but one in which Victorian naturalists had sought to emancipate science from theology and establish a proper scientific outlook on matters that were currently under the domain of religion. By asking these fundamental epistemic questions once again, McDougall was striking directly at the

[30] Ibid., 154.

[31] See my discussion in chapter seven above. Cf. Richard Noakes, 'Spiritualism, Science and the Supernatural in mid-Victorian Britain'; Frank Miller Turner, *Between Science and Religion*.

epistemic boundaries of the scientific enterprise, in a way that aimed to show psychical research to be not only a *legitimate* pursuit, but a highly relevant one, standing at the very core of the empirical sciences on the whole. In the picture that McDougall painted, psychical researchers became "more scientific" than their "dogmatically agnostic" opponents in established university disciplines, putting much stronger emphasis on critical empirical inquiry. If his views were to be adopted by university policymakers, psychical research would not only be included in curricula – it would become the queen of the empirical sciences.

2 Reactionary Networks: How Psychical Research Can Save Western Civilisation (According to W. McDougall)

Maintaining strict boundaries with competitors and excluding internal threats are necessary for a new discipline to obtain any degree of institutional stability. The strategies that we have seen McDougall deploy so far were all tending in this direction, helping to carve out a scientific identity for psychical research and positioning it in relation to other scientific disciplines. But in order to succeed at academic professionalisation, it is not enough simply to have a firm identity. Obviously, there will be an expectation of some "rational content" as well, some promising experimental results, some innovative methodology, an accumulation of knowledge, or a promise of useful technological applications. This part was psychical research's most glaring weakness, as we have seen. Luckily, the success or failure of a scientific discipline is not only judged on its internal rationality or visible "progress". Social and cultural factors also play a role. In fact, sociological analyses focusing on the "extra-scientific" activity of would-be scientists become particularly relevant in situations like this: how can the socio-cultural components of scientific activity conspire to make a disciplinary formation successful, despite the lack of a strong "rational core"? A potential answer to this question can be sought in the theory of "actor-networks": if, as Bruno Latour has argued in the case of Louis Pasteur, the socio-cultural networks of "allies" used to support a discipline play a significant role in successfully establishing it, is it also possible that such actor-networks are *sufficient* and may successfully establish a

discipline even when a strong "rational core" is lacking?[32] The case of psychical research may suggest precisely this.

Exploring this angle, we should trace the networks between psychical research and other discourses that McDougall was knitting together in the 1920s. Some of these discourses were scientific, some philosophical, some religious, and others yet political. Psychical research was crucially linked on all levels.

* * *

McDougall was not afraid of defending controversial positions. For that reason alone, psychical research was quite unavoidably connected to several intriguing and at first sight surprising links once McDougall tried to synthesise his interests. As discussed in an earlier chapter, he was an important spokesperson for what I have termed "the reenchantment of life": he promoted the Lamarckian theory of evolution, neo-vitalism, dualism with regard to the mind/body problem, and argued strongly for the case that teleology is an irreducible feature of nature.[33] He was a forceful conservative voice against mechanistic-materialism and behaviourism in American psychology, and defender of an irreducible dimension of meaning in nature. In addition to these interests, McDougall was also an ardent supporter of *eugenics*. This, we shall see, is quite significant, for eugenics was a powerful discourse bridging science and politics in the inter-war period. It was also a central part of McDougall's public advocacy in his American period. Immediately after arriving in the United States, McDougall delivered a series of lectures that were soon published with the provocative title *Is America Safe for Democracy?* (1921).[34] Here, McDougall argued for the need of eugenic policies to improve the American genetic stock. In particular, he held that the United States was troubled by dwindling intelligence ratios, which furthermore constituted an urgent demographic problem and a threat to American democracy. Needless to say, denouncing the average American as too stupid to vote did not make him a very popular man. In fact, it cemented his reputation as an arrogant British aristocrat, and it was also

[32] For Latour's analysis of the case of Pasteur, see Latour, *The Pasteurization of France*.

[33] For the details of McDougall's positions and arguments on these topics, the reader is referred to chapter five.

[34] The U.K. title was *National Welfare and National Decay*.

in this context that he was dubbed a 'Nietzschean reactionary'.[35]

Nevertheless, McDougall's network of heterodox scientific notions was far from marginal in 1920s America. Vitalism was on the rise, in part due to the publication and wide circulation of Henri Bergson's work.[36] The "modern synthesis" in evolutionary biology would only start to take shape about a decade later, leaving Lamarckism as a still viable, albeit minority option.[37] Meanwhile, eugenics was also at its peak of popularity among psychologists, biologists, statisticians, and politicians two decades before the atrocities of World War II gave the word its current connotations of genocide and state terror.[38] In fact, by 1940, 35 American states had passed laws allowing involuntary sterilisation, and it has been estimated that a minimum of 64,000 eugenic sterilisations took place in the country between 1907 and 1963.[39] Advocating eugenic policies was, in other words, fully possible without losing academic credibility. If anything, it was a way to make one's position more interesting to politicians and policy makers.

Keeping this in mind, it becomes less surprising that McDougall's steps to ally psychical research with controversial discourses that with hindsight appear "tainted" would actually *facilitate* the eventual establishment of professional parapsychology. I shall argue that it was precisely by allying psychical research to ideas belonging to Lamarckism, vitalism, and eugenics that McDougall managed to argue its place and relevance within a broader space of contemporary scientific and philosophical discourse. In fact, I shall argue that he managed to *mobilise* a broad range of contrarian discourses, some belonging to the "re-enchantment of life", others to politically conservative positions concerned with the corrosion of value in modern society and

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[35] McDougall, *Ethics and Some Modern World Problems*, viii.

[36] The English edition of Bergson's *Creative Evolution* became available in 1911, and sparked much debate, as seen in previous chapters.

[37] E.g. Julian Huxley, *The Modern Synthesis*. See my discussion in chapter five for details. For an assessment of American neo-Lamarckism, see Edward Pfeiffer, 'The Genesis of American neo-Lamarckism'. The Larmarckian position appears to have had a significant influence on some of the special fields in biology and psychology, including in early theories of child development, and in insect psychology. See e.g. D. Hoogland Noon, 'The Evolution of Beasts and Babies'; C. Sleigh, 'Brave New Worlds'.

[38] For the character, extension, and influence of the American eugenics movement, see especially Kevles, *In the Name of Eugenics*; G. E. Allen, 'The Social and Economic Origins of Genetic Determinism'.

[39] See Allen, 'The Social and Economic Origins of Genetic Determinism', 88.

with the degeneration of people living in it.

McDougall was striking out a path in the landscape of science and religion that was quite different from those we have seen emerging as full-blown "natural theologies". In a very strict sense, "religion" *per se* was *not* that important for McDougall. Unlike many other leading figures in psychical research, McDougall conspicuously seems to have lacked the typical motivation to save the soul through science.[40] Instead, he was able to implicate religion in arguments for the relevance and social importance of psychical research through a rather different route. Following in the footsteps of William James' pragmatism, he considered religion to play a vital function in society, and it remained desirable to defend a minimum of religious belief for *practical* reasons. McDougall's defence of religion was in a sense *utilitarian*, thus bypassing the "intellectual sacrifice". The question was not about the veracity of religious doctrines, but about the *consequences* of religious beliefs. Those consequences were measured in demographic terms, and enforced with the logic of eugenics. Religion became an *instrumentum regnum*, and psychical research a science for social engineering of the religious type. To understand how this was thought to work, we must look closer at the connection between eugenics, religion, and Lamarckian evolutionary theory.

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In his 1922 support of scientific method in psychical research, McDougall had confessed that eugenics and psychical research were his two greatest "hobbies":

> I have two hobbies—psychical research and eugenics. So far as I know, I am the only person alive to-day who takes an active interest in both of these movements. To most of you perhaps these two lines of scientific study have seemed entirely distinct and perhaps even opposed in spirit.... [F]or my mind at least, these are the two main lines of approach to the most vital issue that confronts our civilization—two lines whose convergence may in the end prevent the utter collapse which now threatens.[41]

The threat McDougall warned about was that of biological *degeneration*, a concern that had haunted many critics since the late nineteenth century, and especially

[40] This stands in some contrast to the founding members of the SPR, as portrayed in e.g. Gauld, *The Founders of Psychical Research*; Turner, *Between Science and Religion*.

[41] McDougall, 'The Need for Psychical Research', 58-59.

those advocating Lamarckian views on evolution.[42] Lamarckian advocates of measures against degeneration feared the rise of a serious demographic imbalance that would threaten the future of civilisation, and ultimately humanity itself. The basic argument was that populations, if left to themselves, would tend to degenerate with the advent of high civilisation. First, this was because modern societies were more hospitable to various biological "misfits" than more primitive conditions had been. Darwinians might easily agree with this point, arguing that natural selection operates differently in modern societies than it had on the savannah. Lamarckians, however, could add that modern societies even *created* "degenerate" traits such as criminality, prostitution, and alcoholism, which they furthermore argued were passed on to the next generation through inheritance. The Lamarckian view, which gave much more causal power to "culture", could argue that modern *culture* was, in and of itself, a catalyst for biological degeneration. Secondly, there was much concern with an imbalance in the birth rates of modern societies: statisticians were showing that the educated upper classes were consistently less fertile than the lower classes. Arguing for the heredity of acquired characteristics, Lamarckians would hold that the social problems associated with the expanding lower classes were inherited by the next generation. When this point was coupled with asymmetrical birth rates, the future of society started to look very grim: while the cultivated classes barely managed to reproduce themselves, the degenerates multiplied. In the longer run, civilisation was doomed to collapse under the weight of the degenerate masses.

Eugenics was the political answer to the threat posed by degeneration. By taking control of the pattern in which humans reproduced, one hoped to prevent degeneration and social collapse from happening by consciously steering the direction of evolution itself. Thus, eugenic policies would aim at increasing fertility among the higher classes, or suggest advantageous strategies of selective interbreeding between various demographic groups.[43] Such policies, aimed at stimulating reproduction among desired

[42] Olson, *Science and Scientism in Nineteenth-Century Europe*, 277-294; for an overview of the spectre of degeneration as it had haunted European intellectuals around the turn of the century, see Daniel Pick, *Faces of Degeneration*.

[43] For representative examples of the measures proposed and discussed in the period, see especially Paul Bowman Popenoe and Roswell Hill Johnson, *Applied Eugenics* (1918); Eden and Cedar Paul (eds.) *Population and Birth Control* (1917). For McDougall's own suggestions, also along the lines mentioned

demographical groups, were sometimes labelled "positive" eugenics. More notorious, however, were the "negative" eugenic policies designed to stop the inheritance of unwanted traits, especially through the sterilisation of those parts of the population that were assumed to carry them.

This general overview of the connections between degeneration, Lamarckism, and eugenics more or less sums up McDougall's own position.[44] It is precisely in recognising the central role of the *Lamarckian* theory in these eugenic arguments that we find a first important entanglement of *psychical research* in his reasoning. Jean Baptiste de Lamarck's model of evolution had posited not only the inheritance of acquired characteristics, but also the existence of an "inner striving", or "motivational force" as the driving force of evolution; thus, in place of mechanism, Lamarckism demanded some sort of *teleological* model. The Lamarckian theory's incompatibility with the mechanistic conception of life was simultaneously a strength and a weakness for the theory: it was a strength because it resonated with the intuitive notion that will, striving, and active choices of the individual are important, and, moreover, was hospitable to cultural and religious agendas that wanted to counter the disenchantment of life. In short: if the self-determined *choices* of the individual matter, then there is a moral dimension to the evolutionary process. In the "disenchanted" Darwinian view, no such dimension is needed. Thus there is a clear connection here to the discussions encountered in chapter five: teleology, meaning, will, and vitalism stand together with Lamarckism. Lamarckism, in turn, urges an active role for moral education, and provides a theoretical framework for understanding the supposed phenomenon of "degeneration". How, then, could psychical research contribute to this nexus of arguments? According to McDougall, psychical research contributed by providing data that, if properly established, required some non-mechanical, vitalistic theory of mind and life. It promised to provide empirical support for what was otherwise a purely metaphysical doctrine (vitalism), and could thus support the principles of Lamarckian

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here, see appendixes II-IV in *Is America Safe for Democracy?*, 185-207. See also his utopian speculations (originally published in 1923), in the form of a dialogue between a scientist and a would-be philanthropist: McDougall, 'The Island of Eugenia'.

[44] Especially as found in the essays of *Is America Safe for Democracy?*, but also in McDougall, *The Group Mind*; idem, *Ethics and Some Modern World Problem*; idem, *World Chaos*; idem, *Religion and the Sciences of Life*.

evolution on a strictly scientific rather than a speculative basis.

Psychical research was deeply implicated in the neo-vitalism movement at large.[45] McDougall was, together with Henri Bergson and Hans Driesch, one of its central spokespersons internationally. All three of these champions of vitalism served as presidents of the SPR at various points. Moreover, we have already seen that a number of lesser known vitalistic theories were developed in the context of that society, including by Myers and Lodge. Indeed, psychical research acted as an incubator of neo-vitalist theories, and it is thus only natural that McDougall would use it as a link to connect psychical research indirectly to other programmes that could be built on a vitalistic psychology/biology.

At this point we begin to see a long chain of ideas emerging, linking the socio-political discourse on degeneration and eugenics to the metaphysical problem of relating minds to bodies. This is precisely where McDougall found a primary role for psychical research, for he held that the most significant and powerful arguments for non-mechanistic agency in nature were to be found precisely in the evidential support gathered in the study of telepathy and survival.[46] Already in his 1911 book, *Body and Mind*, McDougall had cited the so-called "cross-correspondences" as an especially strong argument for the necessity of adopting an "animistic" position of one sort or another. As we saw in the previous chapter, this series of investigations were based on mediums who, apparently without any normal contact between themselves, purportedly communicated with the "same" spirit entities, revealing striking similarities when the messages received were compared to each other. If accepted as genuine, this evidence would prompt any investigator to choose between two explanations that seemed equally fantastic: the survival of personality after bodily death, or tremendous telepathic or clairvoyant abilities active over great distances. McDougall argued that whichever explanation was opted for, some kind of animism would be attractive: if personality really survived death, then it had to be distinct from the body and independent of ordinary mechanistic interactions; if extraordinary telepathic powers explained the data, they would equally suggest a mental reach independent of the physical body and its sensory apparatus.[47] To draw the points together: Lamarckism

[45] See especially my discussion of vitalism in the context of "psychic enchantment" in chapter six.

[46] McDougall, *Body and Mind*, 347-354.

[47] Ibid., 349-350.

and the associated socio-political issues of degeneration and eugenics could be supported *philosophically* by a version of animism, and *empirically* by the findings of psychical research (see figure 12).

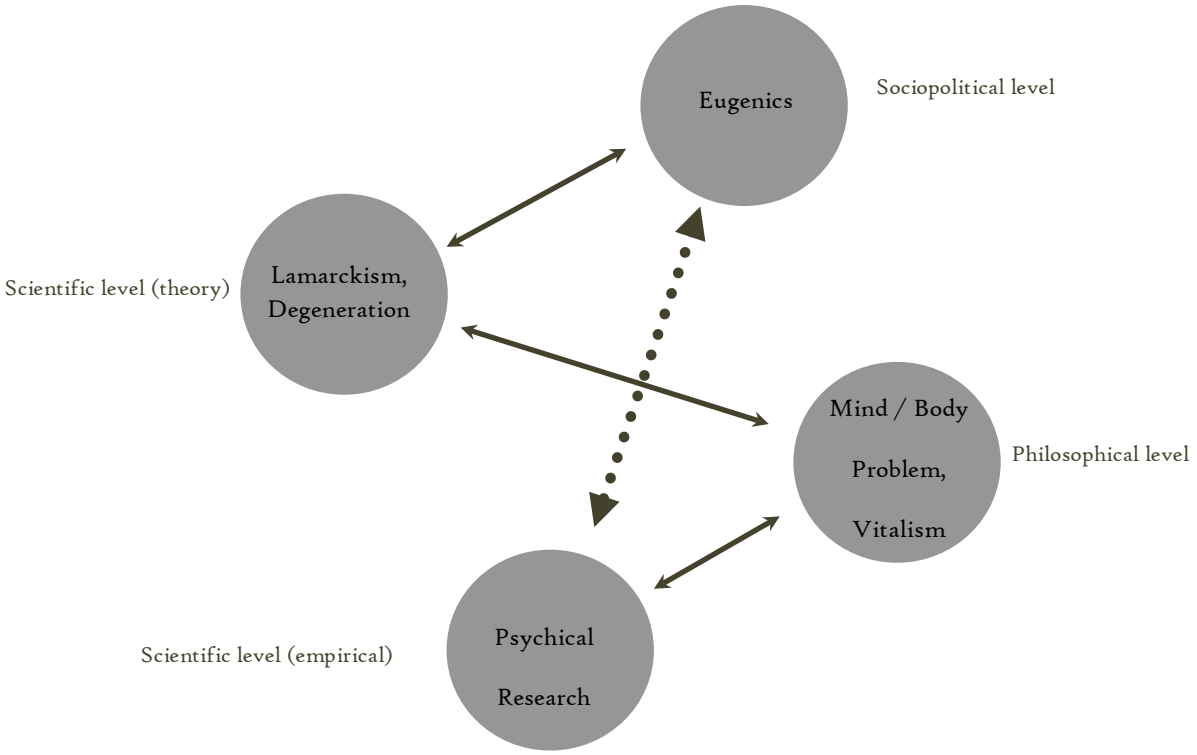


Figure 12: Chain of discourses linking psychical research with eugenics. Unbroken arrows illustrate that direct links were forged between these levels. The result is an indirect linking of the most basic scientific level (psychical research) with the socio-political level (eugenics), illustrated by a dotted line.

But there was also a second and more direct way in which psychical research could help eugenics to counteract degeneration, according to McDougall. This route was closely connected with the question of religion and its perceived conflict with science. Ever since the 19th-century attacks on religion by scientific professionalisers, people had feared that a decline in religious sentiments under the growth of a materialistic philosophy would lead to a withering away of ethics. Indeed, the founders of the SPR had already considered psychical research a possible way to counter this trend by finding empirical evidence for the existence of the soul, thus countering materialist metaphysics and saving some minimum requirement for religious belief systems.[48]

[48] See e.g. Turner, *Between Science and Religion*.

McDougall argued that psychical research was superior to both theology and philosophy when it came to counteracting materialism and mechanism, since it was truly scientific and empirical in character, and not merely speculative as the others.[49]

But the argument concerning religion and ethics did not stop there. Enforced with the logic of eugenics, it took yet another turn, through demographical anxieties and social policies. The real problem with scientific materialism was not some vague notion of a spiritual degradation. The problem was quite specific: a materialist might see no motivation to *procreate*. A number of assumptions were involved in this view: materialists, it was assumed, are not compelled to consider the "sanctity of human life" that had been integral to Christian civilisation, and thus they feel no moral obligation to keep multiplying. Motivated purely by self-interest, having children would seem to them quite irrational. McDougall saw this as part of the demographic problem leading to degeneration, because according to him, loss of faith and morals due to materialism was to be expected primarily among the highly educated strata of society. The result is a structural pattern in which the highly educated fail to pass on their desirable characteristics, and thus perpetuate a demographic imbalance that will eventually bring society down. Providing the intellectual elite with new reasons to procreate was thus paramount. This was precisely the reason why religion had to be made acceptable to intelligent people, so that they might have a moral obligation to procreate even if they did not see any direct personal benefit in the present life they were living. Psychical research could help doing exactly this. As McDougall saw it,

> [u]nless psychical research ... can discover facts incompatible with materialism, materialism will continue to spread. No other power can stop it; revealed religion and metaphysical philosophy are equally helpless before the advancing tide.[50]

The negative demographic pattern could be broken by making materialism less attractive to the educated classes. But intelligent and educated modern people needed good arguments and preferably *scientific* reasons if they were to reject a doctrine or adopt a new one. This was psychical research's mission, and the discipline was now presented as a possible saviour of Western civilisation amidst the impending twin

[49] McDougall, 'The Need for Psychical Research', 56-58.

[50] Ibid., 59.

dangers of a loss of religion and a degenerating society. As McDougall put it in 1927 with regard to the importance of eugenics: 'western civilization declines and decays'—soon it will remain 'for some non-Christian people to carry on the torch of civilization'.[51] McDougall had thus linked the pursuit of psychical research to the future welfare of the state and its people, and indeed to the very survival of Western civilisation.[52]

* * *

If these arguments may seem convoluted and full of strange assumptions, it has to be noted that the negative stereotype of the materialist/atheist as an egoistic or even anti-social loner without family or friends has indeed been a powerful one, and continues to be so today.[53] Moreover, in linking the preservation of the "race" with the adoption of right religion, McDougall was merely following a standard pattern of argument in the wider eugenicist movement of the early 20th century. One of the standard works on eugenic policies in the United States in the period, Paul Bowman Popenoe and Roswell Hill Johnson's *Applied Eugenics* (1918), included a chapter on 'Eugenics and Religion' that is illustrative of this trend. Similar to McDougall's later argument, the authors theorised that the general evolutionary significance of religion might be precisely to cancel the "rational" conclusion that having children is not beneficent for the individual,

[51] McDougall, 'An experiment for the testing of the hypothesis of Lamarck', 304.

[52] Cf. Turner, 'The Victorian Conflict between Science and Religion'; Gieryn, *Cultural Boundaries of Science*, 37-64; Olson, *Science and Scientism*, 240-243.

[53] This was noted by sociologist Colin Campbell, who, in his book *Toward a Sociology of Irreligion* set out to show how "irreligion" to the contrary has been a strong social force, with its movements, organisations, and communities, postulating positive stances on ethics and values that go against religious orthodoxy in the society they find themselves (e.g. ibid., 4-5). For stereotypes against atheists and other nonbelievers today, a recent broad survey showed that American attitudes to atheists were predominated by *distrust*: in fact, atheists were comparable with *rapists* in the degree of distrust articulated towards them by respondents. It should be added that the sort of distrust polled for here was "criminal untrustworthiness", meaning the ascribed likelihood of the person to indulge in anti-social, criminal behaviour. This finding was no doubt linked with another deeply seated belief, still found to be prevalent in America today: the notion that belief in a God who watches over everyone is likely to lead to moral behaviour - and that *disbelief* in such a supernatural entity means the dissolution of morality into savage egoism. This was precisely the same stereotypes that informed the debate about religion, materialism, morality and eugenics in the 1920s. For the survey, see Will Gervais, Azim Shariff, and Ara Norenzayan, 'Do You Believe in Atheists? Distrust Is Central to Anti-Atheist Prejudice'.

and thus ensure the continuation of the species by enforcing and managing the instinct to reproduce. They even argued that it is 'essential to racial welfare' that the 'national religion' is of such a character as to promote an ethics that makes sophisticated people want to have children.[54] This in fact amounted to a theory of religion, quite overlooked in later surveys of such theories,[55] where the evolutionary *function* of religion was to provide incentives to procreate.

While a discourse linking religious morality to procreation was thus well established, McDougall was not the first to make links between eugenics and psychical research either. As is often the case in psychical research, Frederic Myers has historical precedence with a few scattered references to the 'much-needed science' of eugenics appearing in the two volumes of *Human Personality*.[56] Preoccupied as Myers was with "degenerates" and "protogenerates", he argued that

> The main use of knowing in what ways the race tends to slip backwards [i.e. degenerate] is that we may know how to *press it forward* instead. In short, it is a science of eugenics rather than of therapeutics which is the characteristic, the primary science for any living and modifiable race; and for our dawning practical science of eugenics experimental psychology is the indispensable theoretic precursor.[57]

McDougall appears, however, to have been the first to attempt to *demonstrate* the connection between eugenics and psychical research through argumentation. His insistence that the latter has a role to play as a "fundamental science" to support the wider framework of eugenics is a particularly novel feature, which is only dimly prefigured by the quotation from Myers above.[58] By claiming to save some of the intellectual credentials of religion – indeed to make it possible for the 'reasonable

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[54] Popenoe and Johnson, *Applied Eugenics*, 401.

[55] For an overview of some of the most influential theories of religion, see Daniel L. Pals, *Eight Theories of Religion*.

[56] Myers, *Human Personality*, vol. 1, 235; vol. 2, 516, 543. Quotation on page 543.

[57] Ibid., vol. 1, 235.

[58] Another man sharing a dual interest in eugenics and psychical research was the English pragmatist philosopher F. C. S. Schiller, but he does not appear to have made the connection as systematically as did McDougall. McDougall does, however, mention him as the only other man who holds both interests ('The Need for Psychical Research', 58).

scientific man' to accept religion without succumbing to the intellectual sacrifice – McDougall bridged the rhetoric of other pro-religion eugenicists on the one hand, and psychical researchers on the other. He created a line of argumentation that was uniquely his own. It was, however, also a position that proved persuasive to other people who were morally conservative, preoccupied with religion, anxious about national welfare, inclined towards national patriotism, and enthusiastic about scientific progress while sceptical of scientific materialism.

In 1927, McDougall was offered a position as head of the newly established psychology department at Duke University, headhunted by the university's first president, William Preston Few. The young university in Durham, North Carolina, had a distinctly conservative profile, as opposed to the "progressive" establishment of the Atlantic north-east. It had grown out of Trinity College, an institution with strong Methodist traditions, and had turned into a university only in 1924 after receiving funds from the tobacco industrialist James Buchanan Duke. The university's motto was 'eruditio et religio', and it was clear from the outset that education and religion were to go hand in hand at this southern university.[59] At a time when academic psychology was appearing increasingly "atheistic" and secular, McDougall appeared as a good candidate to head an alternative psychology department that respected conservative core values. William Preston Few saw in the controversial Englishman a strong and clear voice against materialism and mechanistic philosophy, and particularly against American behaviourism. As is clear from the correspondence between Few and McDougall before the latter's appointment, and from Few's presentation of McDougall in the student newspaper at the time of his arrival, it was precisely these reasons that had made him a preferred candidate to lead the new psychology department at Duke.[60] He had actively refused the mechanistic and behaviourist trend in psychology, and his growing concern for the upholding of religious values fitted perfectly with Few's vision for the university. Few's inaugural address when becoming president of what had then (in 1910) been

[59] This is clear from the inaugural address given by Few on the beginning of his presidency of what was then still Trinity College. Few emphasised the role of religion and the importance of upholding and supporting it against modern threats. It is to be noted that Few was really the architect behind Duke university, and the Duke family would not have donated to the college had it not been for Few's personal networking and lobbying. See Few, 'The Inaugural Address'.

[60] Cf. the discussion in Mauskopf & McVaugh, *Elusive Science*, 133-134.

Trinity College emphasised precisely these points: the respect of southern religious sentiments and the resistance to materialism were highlighted. The college was to become 'a leader for conservative progress'.[61] With his curious combination of conservative values and a strongly scientific attitude, McDougall appears a fine specimen of a "conservative progressive" if ever there was one.

3 Professionals at last: The Inauguration of the Rhine Era

Arriving at Duke university in the summer of 1927, William McDougall finally found himself in a position to develop policies and administer budgets. He was thus free to start research projects that were dear to his scientific, philosophical, and social persuasions. His first step was to hire staff members that held similar views on psychology as his own – most of whom were former students of his – in practice establishing a department that went against the behaviouristic stream.[62] This led to the commencement of Lamarckian and parapsychological experiments, side by side in the psychology department. During his first year at Duke, McDougall started a little-known set of experiments with rats to test the Lamarckian hypothesis of evolution directly. The experiments ran for a total of seven years. As we saw briefly in chapter five, he even claimed to obtain significantly positive results, and received positive reviews in various scientific periodicals. It was also at this point that McDougall embraced Louisa (1891–1983) and Joseph Banks Rhine (1895–1980), an ambitious botanist couple who had developed an interest for psychical research after reading Bergson's *Creative Evolution* and joined the vitalistic insurgency against mechanistic materialism.[63] Inspired by McDougall's repeated pleas for the institutionalisation of psychical research, the Rhines eagerly wanted to conduct such work in a university setting.[64] Their cooperation with McDougall would lead to the foundation of the first autonomous research institute for parapsychology at an American university. Psychical research was about to transform

[61] Few, 'The Inaugural Address', 54.

[62] Initially, these were Karl Zener, Helge Lundholm, and Donald K. Adams. Cf. Mauskopf & McVaugh, *Elusive Science*, 134-135.

[63] Cf. Mauskopf and McVaugh, *Elusive Science*, 72.

[64] See McDougall's foreword to Rhine's *Extra-Sensory Perception* for some details about this history.

into modern professional parapsychology.

In this last section we shall look briefly at the formation of professional parapsychology at Duke, starting with the collaboration between McDougall and Rhine. This was where psychical research established its first real "paradigm", which was adopted by other researchers working at institutions both in America and abroad. In this section, then, we will finally see the merging of the "internalist" history drawn up in the previous chapter, and the "externalist" considerations made in the present: Rhine's eventual success in establishing parapsychology as a discipline depended on new rounds of networking and boundary-work, in addition to the development of an experimentalist programme that would satisfy the standards of rationality upheld by neighbouring fields.

* * *

Rhine first arried at Duke with his wife Louisa in September 1927, in order to work part-time as an externally funded postdoctoral researcher in the philosophy department. The funding was given to systematise the records of mediumistic séances performed by the benefactor, John F. Thomas, and it was arranged that McDougall would supervise Rhine's work for one semester.[65] Meanwhile, Rhine took the opportunity to follow some of McDougall's courses in psychology, thus slowly learning to know that field. More significantly yet, he was recruited to work as a lab assistant in McDougall's Lamarckian experiments, thus giving Rhine indispensable training in this peculiarly interdisciplinary work in the borderlands of psychology, biology, and philosophy. On the side of these activities, Rhine conducted independent psychical research of a rather peculiar kind. Through the winter and spring of 1928 J. B. and Louisa were researching the mind-reading and future-predicting horse Lady, at a farm in Richmond. Psychologists had showed extensive interest in the cognitive abilities of animals prior to this event, with Oskar Pfungst's experiments with "clever Hans", a horse who was supposedly able to perform advanced arithmetic operations, as the most well-known example.[66] Rhine's research with Lady, partially supervised by McDougall, followed this

[65] For details on this story, see Mauskopf and McVaugh, *Elusive Science*, 79-85.

[66] See Pfungst, *Clever Hans* (1911; originally published in German in 1907). It should be noted that Pfungst's experiments showed how the horse was not really doing any thinking, but that the horse instead

line of research into animal cognition, but investigated supernormal cognitive abilities rather than advanced normal ones. The investigations resulted in two reports published in the *Journal of Abnormal & Social Psychology* in 1929, one generally positive, the other negative.[67]

These were the first published results in psychical research produced in the collaboration between Rhine and McDougall, but it was far from the line of work for which Rhine would become famous and on which modern parapsychology, retrospectively, was to define itself. The tests of the psychic horse were a form of qualitative research that focused on a single individual; the interpretations and tests used were in fact explicitly influenced by the work of the Dutch psychologist Brugmans, mentioned briefly in the previous chapter.[68]

During the first year and a half at Duke, the Rhines spent much time reading systematically in the psychical research literature that McDougall had brought there. Significantly, Rhine used the command of the literature that he thus acquired to make a compressed judgment on the "state of research", which would furthermore direct his own research design.[69] Taking the work of Warcollier, Brugmans, and Estabrooks as particularly successful precursors, he concluded that supernormal cognition, whatever it was, had been shown to: a) be a wide-spread faculty that was yet stronger in some people than others; b) be dependent on states of relaxation, and prone to disappear with fatigue; and c) improve or decline under the influence of various drugs; again, drugs that induced relaxation were thought to be beneficial to psychic functioning. Furthermore, psychic phenomena such as telepathy were unlikely to be electromagnetic in origin, connected for example to extra-cranial neurological influence. In a more methodological reflection, Rhine was also brought to suggest, rather radically, that telepathy and clairvoyance needed to be lumped together as one single experimental object. This was a sound decision, since it was extremely hard to distinguish empirically and experimentally between the two hypothetical faculties. The observation would

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responded to various cues of body language on the part of the human demonstrator. Rhine and McDougall's work on Lady looked for similar types of cues.

[67] Rhine and Rhine, 'An Investigation of a "Mind-Reading" Horse'; idem, 'Second Report on Lady, the "Mind-Reading" Horse'.

[68] Rhine and Rhine, 'Second Report on Lady', 288.

[69] See e.g. Mauskopf and McVaugh, *Elusive Science*, 85.

become central to his own research, but it was also used to reinterpret various earlier studies that had been thought to be negative. For example, Rhine found that the control runs Coover had used against telepathy had been designed in such a way that they did not rule out clairvoyance. Thus, when no difference was found between these controls and the "telepathy" test, there still remained the possibility that both in fact had measured what Rhine called an "undifferentiated" extra-sensory perception.[70] Rhine even suggested that these runs, when checked against a purely mathematical average instead of a control group, had been much more significant than Coover had himself admitted.[71]

The bulk of Rhine's own experimental work was carried out in the period 1930 to 1932. In the summer of 1930 he called upon the assistance of Karl Zener, a colleague in the psychology department and a specialist of perception, to design symbols for a completely new deck of cards.[72] The symbols were designed in a way that was thought conducive to telepathic and clairvoyant perception, principally by being easy to visualise, memorise, and distinguish from one another. The five symbols that Zener came up with – a circle, cross, square, star, and waves – have since become trademarks of modern parapsychology (see figure 13). There were five of each type in a deck of 25 cards, thus making them much easier to use for standardised tests than ordinary playing cards had been. During the first year, Zener and Rhine carried out 800 trials with these new cards, a pilot project which seemed to yield mildly positive results.[73] Among the subjects tested was the undergraduate student A. J. Linzmayer, who appeared to score significantly above chance in repeated tests. Focusing on "high-scorers" such as Linzmayer became another trademark of Rhine's research, significantly bridging earlier experiments that had been based either on the assumption that supernormal faculties were evenly distributed, or that they depended on unique talent. Here, too, Rhine found reason to criticise Coover's earlier results. He claimed that Coover had failed to recognise the significance of the fact that his most successful results had been achieved by a disproportionately small number of his test subjects –

[70] Rhine, *Extra-Sensory Perception*, 25.

[71] This was the case for more of Coover's results, according to Rhine. Ibid., 21-22.

[72] Cf. Mauskopf and McVaugh, *Elusive Science*, 89-90.

[73] Ibid., 90-91.

more precisely 8 % of them, according to Rhine.[74] Rhine's own method was designed to pick out such presumably "natural" high-scorers.

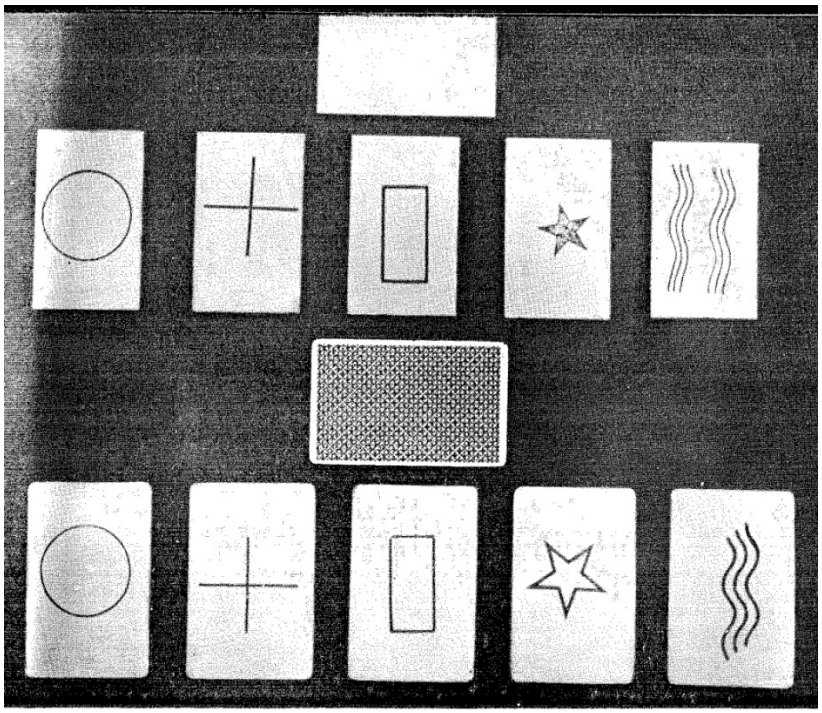


Figure 13: The first two generations of Zener or ESP cards, as shown in Rhine's popular book, *New Frontiers of the Mind* (1937).

Research continued along these lines in 1932, with Rhine recording close to 40,000 Zener card guessings in total.[75] At this point he was making use of graduate students in the psychology department not only as test subjects, but as research assistants. Together with one of these, J. G. Pratt, he came across another high-scorer, Hubert Pearce. Pratt would go on to be a leading voice in the new generation of professional parapsychology in his own right, whereas Pearce became the most successful high-scorer in Rhine's study. After 2,250 trials, Pearce was recorded as having scored 9.6 hits per run of 25 (against a chance expectation of 5). Linzmayer, by contrast, had scored 7.5 per 25 after 2,649 trials – less impressive than Pearce, but still an apparently highly significant figure.[76]

[74] Rhine, *Extra-Sensory Perception*, 21-22.

[75] Cf. Rhine, 'Extra-Sensory Perception of the Clairvoyant Type'.

[76] See ibid., 158.

These experiments became the empirical foundation for Rhine's ground-breaking publication, *Extra-Sensory Perception*. The monograph was published in 1934 by the "pro-science" Boston Society for Psychical Research, with a short report published the same year in *Journal of Abnormal and Social Psychology*.[77] We have already mentioned two of the most significant features of these studies, namely the methodological innovation of employing the new Zener cards, and, of course, the positive results claimed to have been achieved with this new method. In addition to streamlining experimental procedures, Rhine was also concerned with developing a new scientific nomenclature. Earlier references to "telepathy" and "clairvoyance" were now replaced by the more general and unassuming "extra-sensory perception", abbreviated as ESP. What is more, Rhine was concerned with making analytical distinctions between various *types* of extrasensory perception and creating scientific taxonomies. Thus, in his 1934 book he introduced a distinction between two main types: telepathy (ESP of other minds) and clairvoyance (ESP of physical objects).[78] In addition to these "differentiated" types, Rhine worked with a category of "undifferentiated ESP" for experiments where clairvoyance and telepathy could not be clearly distinguished from each other. As we have seen, this was a significant move for experimental purposes, and for reinterpreting earlier work.

The inventory of technical terminology and experimental procedures was expanded further in the years that followed.[79] Rhine had already mentioned the possibility of a *temporal* dimension to ESP in *Extra-Sensory Perception*.[80] Further development of that idea gave rise to the concepts of *precognition* (ESP of the future) and *retrocognition* (ESP of the past). Although Rhine would later acknowledge that no reliable support for retrocognition had been forthcoming, precognition became one of his favourite effects:[81] more than any other parapsychological effect, precognition seemed incompatible with the present physical worldview. It seemed to imply a complete break-down of causality as well as the arrow of time.

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[77] Cf. Mauskopf and McVaugh, *Elusive Science*, 92-94.

[78] Rhine, *Extra-Sensory Perception*, 14.

[79] See Mauskopf and McVaugh, *Elusive Science*, 169-183; Beloff, *Parapsychology*, 140-142.

[80] Rhine, *Extra-Sensory Perception*, 14

[81] See e.g. Rhine and Pratt, *Parapsychology*, 13, 55-59, 69-70, 123. Cf. Mauskopf & McVaugh, *Elusive Science*, 169-175.

In addition to the temporal expansion of ESP, experimentation was begun on the more spectacular *physical* phenomena of psychical research, now re-invented as *psychokinesis* (PK), or 'the direct action of mind upon matter'.[82] In a paradigmatic experiment, the "agent" would attempt to influence the rolling of dice.[83] These experiments, too, seemed to yield positive results with a number of subjects, and Rhine encouraged his correspondents to take up similar research and replicate his results. More than with any of the extra-sensory effects, even those with a temporal dimension, PK research seemed to point without doubt in the direction that Rhine wanted to go: that mind was not ruled by mechanical law, but acted in a manner independent from the physical body.[84]

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The results Rhine claimed to have obtained captivated both laymen and professional psychologists. A network of correspondents emerged following the publication of *Extra-Sensory Perception*, including both professionals and amateurs interested in setting up experiments and attempting replication of the results.[85] Taking advantage of the momentum, Rhine established the *Journal of Parapsychology* (*JP*) in 1937. With its own specialist, peer-reviewed forum, the new discipline of parapsychology was to attain additional scientific recognition. The first issue was dedicated to publishing independent replications of Rhine's findings, thereby seeking to consolidate the status that had already been built in 1934.[86]

Seeking scientific recognition through a peer-reviewed journal has certain consequences. When the journal starts to publish reports of radical breakthroughs, colleagues will want to critically analyse the data, look for flaws, inconsistencies or experimental error, and seek alternative hypotheses. The establishment of *JP* in 1937 indeed marks the beginning of a wave of critical responses to parapsychology, primarily coming from the discipline that it most sought to attach itself to: experimental psychology.

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[82] Rhine and Pratt, *Parapsychology*, 13.

[83] Mauskopf and McVaugh, *Elusive Science*, 170-171.

[84] Cf. ibid., 173.

[85] See ibid., 183-190.

[86] For details, see ibid., 187.

Several features of Rhine's published experiments made critics suspicious. Robert Thouless, himself both a psychical researcher and a psychologist, criticised Rhine for being imprecise in describing the procedures that had been followed and the controls used, a criticism that was quickly followed up by other psychologists.[87] An even graver allegation was levelled by the second-generation behaviourist B. F. Skinner, who had made the acute observation that both the original homemade Zener cards and the commercially produced decks that appeared later, were designed in such a way that it was possible, under certain conditions, to see the symbol of a card from the back.[88] This indicated a highly problematic source of error, especially when combined with the troubling lack of precision in Rhine's description of how the apparently successful early experiments had been conducted. It would seem that sensory cues could not be properly discounted, throwing all the results into doubt.

The possibility of such sensory cues becomes even more troubling when one considers that suddenly, in the summer of 1934, all of Rhine's high scorers seemed to simultaneously lose their powers.[89] In an attempt to stimulate them to scoring well again, Rhine decided to relax the test conditions. Doing this, however, he personally caught his subjects cheating by making use of sensory cues. Rhine immediately kept this troubling piece of information to himself, apparently reasoning that the earlier experiments had been so much stricter that no such cheating would have been possible – even if the subjects would have wanted to.

Selection bias would later be brought forward as a possible source of error for many of Rhine's findings.[90] There has for example been much concern with Rhine's

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[87] For reviews, see Thouless, *From Anecdote to Experiment*, 76-77; cf. Mauskopf and McVaugh, *Elusive Science*, 191-2, 256-72.

[88] Ibid., 260-263.

[89] This story is related briefly by Mauskopf and McVaugh, *Elusive Science*, 175. Unfortunately, they do not provide accurate references for the event, which appears tremendously important for a full critical assessment of what went on at Duke during these crucial years.

[90] The mathematician and sceptic Martin Gardner has for example suggested that the way Rhine selected his famous "high scorers" was a simple way of generating a seemingly positive, but entirely artificial result. The so-called "decline effect" that Rhine and other parapsychologists became interested in (namely that the significance seemed to gradually disappear in repeated runs, even with the best subjects) was furthermore seen as a reason for suspicion, the suggestion being that it could simply be special case of "regression to the mean". See Gardner, *Fads and Fallacies in the Name of Science*, 302-8.

stated policy for the *Journal of Parapsychology* that 'little can be learned from a report on an experiment that failed to find psi'.[91] This policy suggests that the journal systematically avoided publishing negative results, leading to a systematic bias that may create the illusion of a strong evidential foundation where there was in reality much more room for doubt. This is particularly problematic with the failure to publish unsuccessful replication attempts.

In early criticisms of the "Duke school" of parapsychology there was also much concern with the statistics used by Rhine and his companions.[92] One correspondent of Rhine's, R. R. Willoughby, pointed out that some of the "astronomical odds" Rhine conjured up from his data were in fact so astronomical as to warrant *ipso facto* suspicion; if they had been calculated correctly, ESP would appear better established than the prediction that the sun will rise in the morning.[93] Indeed, this is suspiciously reminiscent of the debate concerning improper uses of probability that raged in the SPR journal as early as the 1880s in response to Richet's early work and C. S. Peirce's fierce criticism of *Phantasms of the Living*.

In short, Rhine and his collaborators had a tough time maintaining their newly won professional recognition. To make matters worse, the Duke parapsychology laboratory lost its backing from the university in the mid-1930s, as McDougall stepped down as head of department and could no longer guarantee its place. These disappointments made alternative strategies necessary in order to maintain the legitimacy of the field. Most significant was a turn towards lay people and possible external sources of funding.[94] Parapsychology was in the middle of a new growing phase of popular interest, and Rhine turned out to be a deft publiciser and fundraiser.

In fact, losing its influence over the university budget would prove less of a financial problem than a status problem: in 1935, yet another independently wealthy person with spiritualist leanings offered significant donations to make parapsychology

[91] "Psi" being a generalised term used to refer to all paranormal psychic effects, including all types of ESP and PK. Cited in R. S. Broughton, 'Publication Policy and the *Journal of Parapsychology*', 27.

[92] See especially Mauskopf and McVaugh, 'The Controversy over Statistics in Parapsychology 1934–1938'.

[93] Mauskopf and McVaugh, *Elusive Science*, 196.

[94] See Paul Allison, 'Experimental Parapsychology as a Rejected Science', 283-288.

independent of the psychology department's budgets.[95] This endowment put Rhine in an extremely advantageous position in comparison to his colleagues at Duke university. As Mauskopf and McVaugh have documented, the sum Rhine had at his disposal to fund parapsychological research, after all other expenses had been paid for, was almost *four times as high* as what the rest of the psychology department had for research put together! Indeed, Rhine's money accounted for more than one tenth of the research funds of the entire university – and that included a well-funded faculty of medicine.[96] By the end of the 1930s, parapsychology was not only established in a university setting, it had become a disproportionately well-funded discipline as well. While the university location was due in large part to the networking of McDougall, the discipline's wealth was thanks to rich aunts and uncles with a desire for knowledge about life after death – convinced by a charming Rhine.

In addition to securing independent funding through private donations, popularisation and skilful handling of the media was another mark of Rhine's activities to secure parapsychology in the late 1930s. Media coverage of the unusual research at Duke peaked around 1937/1938, when Rhine published his popularising account *New Frontiers of the Mind*. The book defended McDougall's anti-mechanistic, vitalistic conception of the human mind based on new parapsychological evidence. It was successfully marketed, appearing as a Book-of-the-Month-Club selection, and even given commercial radio attention by the Zenith Radio Corporation. For a whole year they broadcasted weekly ESP-"tests", often featuring Rhine himself in the studio. Zener-cards were now commercially produced and sold – appearing with a J. B. Rhine copyright.[97] Indeed, these years saw a rapid commercialisation of the paranormal, with Rhine appearing as part scientist, part prophet, and part salesman.[98]

The massive media coverage brought parapsychology to everybody's lips. Incidentally, this made it easier to raise funds as well. Over the years, contributions

[95] Mrs. Bolton, wife of an industrialist from Cleveland and friend of the famous English medium Eileen Garrett. It was Garrett who had put Rhine and Bolton in touch with each other. See Mauskopf and McVaugh, *Elusive Science*, 137.

[96] See Mauskopf and McVaugh, *Elusive Science*, 139.

[97] For this commercialisation process, see Mauskopf and McVaugh, *Elusive Science*, 160-163, 256.

[98] Cf. the discussion of the Rhines' later preaching during the post-war era, in Hess, *Science in the New Age*, 76-85.

from various rich uncles, usually requesting more research on post-mortem survival, piled up. It has been estimated that Rhine's later independent research lab, the Foundation for Research on the Nature of Man, comfortably presided over two million dollars by 1968.[99] These channels of funding, unconventional and with strings attached, nevertheless made parapsychology an easier target for its critics. Indeed, it is the source of the funds rather than the lack of funding that appears to be parapsychology's eternal problem.[100]

* * *

Parapsychology and psychical research appear to have gone into hibernation during the Second World War.[101] After the war, however, the struggles to keep parapsychology legitimate, coupled with continuous attempts to network it with popular interests in the "paranormal" as well as with various moral and political issues, continued as before. Against the new geopolitical and ideological threats of the emerging Cold War, Rhine was opportunistic enough to brand parapsychology as a defence of voluntarism, and the "correct" political view of American liberalism.[102] Parapsychology was now sold to laymen, government, and would-be private financiers as a cure for America's "spiritual ailments" and as a battle station against the impending dangers of materialism and communism. Parapsychology was even conscripted for military purposes, with the Star Gate programme, begun in 1972, as the most significant example.[103] This government-

[99] Allison, 'Experimental Parapsychology as a Rejected Science', 283. The economic power of these funds in 1968 is equal to 31,9 million dollars in today's economy, according to measuringworth.com. Note that other methods of comparison are possible; economic power, which estimates the value based on the proportion of the total economy, seems most relevant for comparing the size of research budgets.

[100] Cf. Harry Collins and Trevor Pinch, 'The Construction of the Paranormal', 254-255.

[101] In Germany, the hibernation started already with the Nazi takeover in 1933. This is dramatically exemplified in the correspondence between Rhine and Hans Bender. The correspondence started in 1936, and continued irregularly for a couple of years, until 1938. Then follows a hole until after the war, when, from 1947 onwards, Rhine continued the correspondence and contributed significantly with resources for the rebuilding of Bender's research facilities in Freiburg. See the Rhine – Bender correspondence, IGPP-Archiv 10/5, A II 13.

[102] Especially in his popularising work, *New World of the Mind*, published at the height of McCarthyism in 1953.

[103] For an evaluation of Star Gate, see the official report by Mumford, Rose, and Goslin, *An Evaluation of Remote Viewing Research and Applications*.

funded research programme into applications of parapsychology for military intelligence was only disbanded as late as 1995, after the CIA assumed control and judged the project to have been a complete waste of tax money.[104] Parallel to such successes and failures, parapsychologists have been forced to fight off an increasingly growing, self-aware, and well-organised group of sceptics and debunkers, standing in the tradition of people such as Peirce, Jastrow, Houdini, and Coover.[105] In short, the fight for parapsychology's status as an academic field was far from over at the end of the 1930s, but has continued through the entire 20th century and into the 21st. All of that, however, is a separate story.[106]

4 Conclusion: Enchantment in Old Dixie

Parapsychology managed to become a professionalised discipline due to sociocultural rather than strictly scientific reasons. The case of parapsychology, and particularly the development from McDougall's campaign in the 1920s through Rhine's activity at Duke, thus serves as a good illustration of the usefulness of a social study of scientific formations: an analysis focused strictly on "rational reconstructions" simply fail to find a satisfying explanation for the establishment of psychical research within a university context. While this is interesting in its own right, and an important vindication of the

[104] Ibid. Cf. the somewhat bitter reflection by Star Gate's last director, Edwin May, 'The American Institutes for Research Review of the Department of Defense's Star Gate Program'.

[105] Secondary literature on the so-called "skeptics' movement" are surprisingly hard to come by, especially outside of the polemical literature either defending or detesting it. Some focused discussions are available in Olav Hammer, 'New Age Religion and the Sceptics'; idem, 'Contested Diviners'; Asbjørn Dyrendal, '"Oh no, it isn't": Skeptics and the Rhetorical Use of Science in Religion'. For the relation between sceptics and parapsychologists in the post-war era, see David Hess, *Science in the New Age*. For an example of discussions biased in favour of parapsychology (by far the most common one as far as biased historical overviews go), see e.g. Chris Carter, *Parapsychology and the Skeptics*; cf. the sociological analysis by Jeremy Northcote, *The Paranormal and the Politics of Truth*, which is itself only a little less biased in this direction. The primary literature is too vast to quote in passing.

[106] For my own take on the development, and particularly of parapsychologists' struggles to keep legitimacy during this period, see Asprem, 'Parapsychology', 651-664. The most complete study, although taking a somewhat more cultural-anthropological approach, is Hess, *Science in the New Age*. See also Asprem, 'Psychic Enchantments of the Educated Classes'.

usefulness of sociologically oriented studies of science, the precise *nature* of the networking aspect is of particular importance for us at present. The strategies wielded by McDougall to link psychical research to pivotal philosophical, social, and political issues *demonstrate the centrality of the problem of disenchantment*. The alliance with biological vitalism, purposive psychology, and epistemological anti-mechanism mobilises the entire spectrum of opposition to disenchantment. The only "usual suspect" missing is a reference to quantum mechanics. Connections between parapsychology and quantum mechanics *did*, however, appear in Germany, particularly in the work of physicist Pascual Jordan, who had contact with the German parapsychologist Hans Bender.[107] The collaboration between Wolfgang Pauli and Carl Gustav Jung is another case in point. In America in the late 1920s and early 1930s, however, it was simply too early for such a connection to be made, seeing that the broader popularisation of the Copenhagen school and the popular reception of quantum mechanics would only pick up speed after the War. From that point onwards, however, links between parapsychology and quantum mechanics have become abundant and indeed predictable.[108]

Significantly, it was the mobilisation of anti-disenchantment discourses that in the end made it possible for parapsychology to emerge as a professional discipline. It was on the basis of this network of discourses that McDougall was headhunted by the president of Duke University. Furthermore, it was only after discovering Bergson's vitalism that the Rhines discovered psychical research and followed McDougall's pleas for a scientific and university-backed research programme. While it is often assumed that the modern academy has built its very identity on a "disenchanted" outlook, the professionalisation of parapsychology suggests that things may have been a little more

[107] Bender mentions having met with Jordan to exchange information on parapsychology in a letter to J. B. Rhine dated March 24, 1949. It is unclear if they were in touch also before the war, but we do know that Jordan explored the possible relation between quantum mechanics, vitalism, and parapsychology already in that period, publishing a paper on parapsychology in the *Zentralblatt für Psychotherapie* in 1936. Jordan, 'Positivistische Bemerkungen über die parapsychologischen Erscheinungen'.

[108] I will not attempt to give any comprehensive list of references to this development in the post-war period, seeing as it falls outside of the scope of the present study. I will, however, note that the link appears to have grown particularly popular in the 1970s, with a whole conference dedicated to 'Quantum Physics and Parapsychology' in Switzerland in 1975. See Laura Oteri, ed., *Quantum Physics and Parapsychology*.

complicated. The explicit and forceful *rejection* of disenchanted values (*sic*!) may even have created some surprising strategic advantages. In this particular case, the advantage is no doubt tied to a broader context of national history and identity politics specific to the United States: Duke was a young university, and president Few was explicitly interested in building an identity that was specifically "southern". The memory of the Civil War and a nostalgia for old Dixie forms a significant and evident subtext to Few's academic policies, evident from his inaugural address.[109] In this particular case, then, the identity of north and south is projected on an axis that coincides with disenchantment/enchantment. Thus, even if parapsychology would prove to be far removed from religious orthodoxy as conceived of by most southern Christian denominations at the time, it became an ally of the "southern" university by challenging the explicitly mechanistic materialism of "northern" behaviouristic psychology.

I have suggested that the relation to religion has remained important, although in a generally more utilitarian and instrumentalist way than what we have seen in, for example, the new natural theologies of the same period. McDougall's defence of religion was justified by utilitarian concerns for the future of Western civilisation (and the white race) rather than a metaphysical interest in the existence of divinity, a longing for transcendence, the survival of the soul, or any such common agenda. In addition, there is the factor of a genuine curiosity coupled with a perhaps overly optimistic view of the reach of scientific knowledge. Rhine's interest in religion followed these general lines, although the eugenic and Lamarckian interest of McDougall are not to be found in his later work. It is, however, notable that Rhine wrote a paper on 'Experimental Religion' in 1929, which, although he distributed it to a number of correspondents over the years, has remained unpublished.[110] This paper is important, as it shows the preoccupation of bringing religion on to a new and solid foundation, raised on sound scientific methodology. Rhine attempted to solve a problem that had apparently haunted him since his college days, namely 'that of finding a place for a spiritual element in a human

[109] Flew, 'The Inaugural Address'.

[110] The manuscript is kept in the archives of Duke University. Unfortunately, it has not been possible to access these sources first-hand for the present study. See, however, Mauskopf and McVaugh, *Elusive Science*, 86-87, 328 n. 53.

nature increasingly comprehended by science'.[111] As Mauskopf and McVaugh summarise:

> The weakness of religion … was that it rested on authority and inevitably collapsed before the modern spirit of investigation; consequently, to survive, religion would have to test its assumptions empirically in the spirit of modern science. This could scarcely be done by the bitter opponents or confirmed supporters of orthodox religion; nor by scientists professing religion, who would inevitably have compartmentalized the two subjects for good and all; nor by theologians who felt that science and religion must inevitably be in harmony … . Instead, it was open-minded scientists with no previous commitments who might hope to verify – or disprove – the claims of religion.[112]

We can hear the echo of McDougall's rhetoric as well as the concerns of the early pioneers of psychical research. Rhine even envisaged the creation of an 'Institute for Experimental Religion', that would apply strictly scientific methods to investigate "religious" claims such as the effects of prayer, the existence of ghosts and apparitions, and look for evidence of the soul in the workings of biological organisms. This brings Rhine closer to an explicit programme of natural theology, in the form of the school of psychic enchantment. Some of the later popularisations of parapsychology may indeed be seen to pick up this trend, and to do that with the important rhetorical power of being backed by an ostensibly scientific discipline, conducted and taught in universities.[113]

* * *

Following a line of enchanted science had, however, proved to be a risky endeavour, and parapsychology has never managed to become anything more than an ambiguous and controversial field at best. While I have focused on the specific advantages that were gained by attacking the problem of disenchantment in such a straight-forward way, there is little doubt that it also led to a fair share of problems. Even though the discipline

[111] Ibid., 86.

[112] Ibid., 86-87.

[113] Indeed, parapsychology seems to have created a persuasive and widespread framework for deinstitutionalised religion in the modern West, correlating with a high level of education. For an analysis of this phenomenon, see Asprem, 'Psychic Enchantments of the Educated Classes'.

was, from a purely methodological perspective, always on a shaky foundation, it would seem that the very rejection of "disenchanted" modes of scientific theorising has become an *ipso facto* reason for sceptics to raise an eyebrow even *before* checking the evidence. In other words, sceptics might have found better reasons to reject parapsychology than the ones they were actually motivated by. This, finally, may be explained by returning to the two meanings of "paradigm". Parapsychology established its professional status in a period where discussions about the broader "worldview" of modern science were unsettled. Furthermore, it succeeded by allying a paradigmatic constellation that has turned out to be rather short lived: vitalism and anti-mechanistic theorising had some academic power in the 1920s and 1930s, but has for the most part been obscured since the Second World War, especially, it seems, in the disciplines of psychology and biology. Parapsychology joined a losing team, and for this it has gotten into trouble. Since no "paradigmatic revolution" has occurred (although the prophets of such a revolution have been legion), it has been very easy to reject parapsychology since their data do not fit any meaningful conceptual or theoretical scheme. Ironically, perhaps, parapsychology is often rejected on similar extra-scientific grounds as those on which it was accepted in the first place.

Indeed, if we concentrate on the narrow sense of paradigm, we see that there was never much reason to accept parapsychology as part of the scientific fold in the first place. The evidence has always been flimsy, elusive, and uncertain, far from the kind of rock-solid certainties that have been driving major scientific revolutions in the past. While calls for a methodological reorientation have been plenty, no irrefutable regularities have emerged from the gestalt shifts. Thus, the apologists of parapsychology may be right that an "irrational" animosity based on paradigmatic "incommensurability" has been driving some of the resistance towards their field,[114] but it is, nevertheless, the failure to produce a paradigm supportive of progressive normal science that constitutes parapsychology's most fundamental problem.

[114] As suggested by sociologists Harry Collins and Trevor Pinch, *Frames of Meaning*.

PART FOUR

ESOTERIC EPISTEMOLOGIES

10

Esoteric Epistemologies

> [E]ven as Socrates called down philosophy from heaven to earth, so in a somewhat different sense it was Swedenborg who called up philosophy again from earth to heaven; who originated the notion of science in the spiritual world, as earnestly, though not so persuasively, as Socrates originated the idea of science in this world which we seem to know. It was to Swedenborg first that that unseen world appeared before all things as a realm of law; a region not of mere emotional vagueness or stagnancy of adoration, but of definite progress according to definite relations of cause and effect, resulting from structural laws of spiritual existence and intercourse which we may in time learn partially to apprehend.
>
> Frederic Myers, *Human Personality*, Vol. I, 6

INTRODUCTION: ESOTERICISM 3.0 AND THE PROBLEM OF DISENCHANTMENT

"Western esotericism" is a contested label among historians of religion and culture.[1] Recently, a new historiography has started to emerge in this field, which appears to amend old problems and bridge some of the main differences between earlier

[1] In addition to the problematic relationship between "esotericism" and the academy at large, I am thinking here of the differences and sometimes prolonged disagreements between central scholars *within* the field, such as Antoine Faivre, Wouter J. Hanegraaff, Kocku von Stuckrad, Arthur Versluis, Nicholas Goodrick-Clarke, and Marco Pasi. I will not treat all these approaches in any detail, nor give a concise overview, but references may be handy for the reader. The best overview of the current situation is found in a critical review article of introductions to the field: Hanegraaff, 'Textbooks and Introductions to Western Esotericism'. For the central positions, see Faivre, *Access to Western Esotericism*, 3-47; von Stuckrad, 'Western Esotericism' (2005); idem, *Locations of Knowledge in Medieval and Early Modern Europe*, 43-64 (2010); Versluis, *Magic and Mysticism* (2007); Goodrick-Clarke, *The Western Esoteric Traditions*, 3-14 (2008); Pasi, 'Il problema della definizione dell'esoterismo' (2008). Hanegraaff's position has gradually evolved since the early 1990s, with some major references being Hanegraaff, 'Empirical Method in the Study of Esotericism' (1995); idem, *New Age Religion and Western Culture*, 384-410 (1996); idem, 'Beyond the Yates Paradigm' (2001); idem, 'Forbidden Knowledge' (2005); idem, 'The Birth of Esotericism from the Spirit of Protestantism' (2010); and finally idem, *Esotericism and the Academy* (2012), and *Western Esotericism* (2013).

approaches. It encompasses the most central aspects that have previously been connected with "esotericism", while promising to place the field as a whole on a sound methodological footing.[2] In terms of a software metaphor introduced by one of the leading spokespersons of this new historiography, the field is about to undergo a system upgrade from "Esotericism 2.0" to "Esotericism 3.0" – with important bug fixes, better interface and increased user-friendliness.[3] In order to avoid a tiresome discussion of theoretical and methodological positions that are now rapidly becoming superseded, it will suffice to say that my discussion in this chapter is situated in the context of the emerging third generation. The new historiography of esotericism is committed to an emphasis on *contextualism* over essentialism, *complexity* over simple binaries and stable identities, and historical *change* over stability.[4] In the present chapter I shall argue that a problem-focused view of disenchantment is particularly well-equipped for responding

[2] The key references for this new historiography are found in the latest work of Wouter Hanegraaff, notably Hanegraaff, *Esotericism and the Academy*, and the introductory book, idem, *Western Esotericism*. To these could be added Kocku von Stuckrad, *Locations of Knowledge*, and Asprem & Granholm (eds.), *Contemporary Esotericism*. See particularly the introduction to the latter volume: idem, 'Introduction'.

[3] On this view, first-generation esotericism scholarship (or "Esotericism 1.0", to follow Hanegraaff's software metaphor) was characterised by overtly religionist agendas in the spirit of the Eranos circle. Second-generation scholarship was born with Faivre's publications in the early 1990s, attempting to introduce a neutral and empirical methodology to the field. Ultimately, however, the second generation was characterised by a swarming number of different approaches, sometimes claiming to follow each other while actually pursuing very different projects, and often implicitly retaining much of the religionist past. The hopes for the third generation of esotericism scholarship – Esotericism 3.0 – is that we will finally shed the dead weight of the field's religionist past, and succeed in taking up a critical methodology that is on a par with those found in bordering fields such as the history of religion and intellectual history. What is needed for the new historiography of esotericism thus comes close to what Bruce Lincoln formulated for the history of religion already a decade and a half ago: 'To practice history of religions in a fashion consistent with the discipline's claim of title is to insist on discussing the temporal, contextual, situated, interested, human, and material dimensions of those discourses, practices, and institutions that characteristically represent themselves as eternal, transcendent, spiritual, and divine.' Lincoln, 'Theses on Method', 395.

[4] The emphasis on these three points is my own, but they seem to sum up some of the most noticeable trends in the direction that the study of esotericism research is currently taking. Above all, they point toward a significant departure from approaches developed under the influence of religionism (which in this case I will take to include Faivre's famous "form of thought" definition, which is derivative of religionism even though it has left the explicit agenda behind).

to these "three Cs". It is designed precisely to focus on the complexity of discourses about knowledge, to pay attention to a greater number of contexts, and to account for change and instability in terms of dialogical and discursive struggles with a *problem* rather than the "predictable" changes brought about by a *process*. Furthermore, and vice versa, insights from the new historiography of esotericism are invaluable for studying the problem of disenchantment as it has played out in the early 20th century. Esoteric discourse occupies a curious place in between disciplines: it typically reaches out for religion, science, and philosophy alike. While the days when esotericism had any widely *accepted* claim of participating in the two latter fields have long since passed, modern esotericism is still frequently bent on bridging, or even unifying, all three.[5] This makes it an obvious site for exploring the problem of disenchantment, for here we can expect to find attempts to harmonise science and religion, to freely engage in speculative metaphysics of nature, and to extrapolate values from scientific facts. In short, we may expect to see stubborn refusals to undergo the intellectual sacrifice, and a will to extend certainty far beyond the pale of "science" as viewed strictly from the angle of Kantian philosophy.

Esotericism has already been implicitly present in most of the preceding discussions. It is not merely a coincidence that revolts against disenchantment in physics during the interwar period were so easily connected with historically "esoteric" systems of thought. Neither does it seem trivial that the new natural theologies so often displayed affinities with theological options that have historically been problematic from the perspective of Western church doctrine, but have remained common in esoteric heterodox movements from late antiquity to the present day. Similarly, the vitalism controversy has a number of connections with esoteric discourse, whether we look at Driesch's flirtations with spiritualism and the presidencies of Driesch, Bergson, and McDougall in the SPR, or at the deeper historical connections between ideas of vital

[5] I am assuming here that esotericism is today seen as a normal part of the religious landscape of the West. The most obvious support for such a claim goes through the observation that much late-modern and contemporary spirituality is in some sense "esoteric", and furthermore that these forms of esoteric religion are becoming increasingly *mainstream*. See e.g. Hanegraaff, *New Age Religion and Western Culture*; Partidge, 'Occulture is Ordinary'. Examples of esoteric discourse overlapping with science, politics, and other fields of culture today are available in the contributions to Asprem & Granholm (eds.), *Contemporary Esotericism*.

forces and esoteric discourses on animal magnetism and other exotic forces, fields, and fluids. Psychical research itself emerging from an encounter between esoteric currents and Victorian naturalism. In a sense, it was but taking the claims of spiritualists and occultists seriously and consistently pursuing the scientific dimension of their professed worldviews that gave birth to this peculiar empirical study of psychic powers, etheric forces, and the afterlife. As was argued in chapter seven, psychical research developed in the context of an open-ended naturalism, which included the Victorian esoteric, respected (for the most part) the authority of scientific inquiry, while opposing strict disenchantment. In these closing chapters, we shall finally consider the esoteric context in its own right.

* * *

We may distinguish three dimensions, or problem areas, of Western esotericism as it appears in the upgraded new historiography: 1) a *social* dimension concerned with "rejected knowledge"; 2) a *worldview* dimension concerned largely with enchantment/disenchantment; and 3) an *epistemic* dimension concerned with "gnosis", higher knowledge, and special faculties or methods for obtaining it. All three dimensions concern systems of knowledge and knowing in one way or another.[6] Moreover, they emphasise aspects of "esoteric knowledge" that all have a certain bearing on the problem of disenchantment. I shall discuss each of these aspects in some detail in the following sections, but let me first give a preliminary overview.

Investigating esotericism as *rejected knowledge* implies a focus on the social dimension of knowledge construction, and especially the role of the emerging Western academy after the Enlightenment. That the disparate currents, figures, and systems that fall under the category of esotericism first and foremost share a status of "rejected knowledge" is a point that has been emphatically made in Hanegraaff's most recent work.[7] In addition to finding a new form of historical specificity for esotericism in historically contingent polemical encounters, this dimension also directs attention to

[6] They are, however, also associated with important practical and material aspects that should by no means be underestimated – especially since the practical dimension has been seriously neglected by earlier research. Some of the practices concerned with obtaining knowledge will be discussed in the following chapters. Cf. Hanegraaff, *Western Esotericism*, 102-118.

[7] E.g. Hanegraaff, *Western Esotericism*, 13-15. Cf. idem, *Esotericism and the Academy*.

specific *social* locations of knowledge-construction, setting the socio-historical parameters for discussing the relation between academic knowledge and the esoteric after the Enlightenment. Here there is an obvious overlap with the socio-historical focus on professionalisation and institutionalisation that I have employed in previous chapters on psychical research and natural theologies. I will suggest that the focus on esotericism as a construct arising from processes of identity-formation (polemical and apologetic), first in theological, and then in scientific and philosophical circles during the Enlightenment, can fruitfully be developed further by following the lines I have developed in previous chapters.[8] In particular, the problem-focused view of disenchantment can bring more nuances to light when we look at what happened with this polemical narrative of rejection after the Enlightenment.

Secondly, the *worldview dimension* concerns specific systems of cosmology, theology, the relation between man, god, and nature, the origin and destiny of the world, and the possibilities for salvation. Incidentally, esotericism has often been seen as a prototypical pre-Enlightenment "enchanted" worldview, connected historically with currents such as Neoplatonism and Hermeticism.[9] This association has resulted in a dilemma that is seldom resolved in a satisfactory manner: either one has a static view of esotericism where later adaptations that appear less "enchanted" have to be excluded, or one must come up with some construct of a "disenchanted esotericism" to account for them. In the latter case, one also needs to choose between either a problematic separation between "proper" (enchanted) esotericism and various "diluted" (disenchanted) appropriations, or abandon the "enchanted worldview prototype" altogether. In the new historiography, the tendency has been towards the latter approach: there is no *essential* connection between esotericism and enchantment; instead the scholar is interested in the development of esoteric discourses in the context of shifting plausibility structures in Western history. As a result, important strands of post-Enlightenment esotericism have been theorised as "disenchanted esotericism" in the sense that innovations of doctrine and practice have taken place in order to *accommodate* a broader "disenchanted" culture. This theorisation is problematic and

[8] Cf. Hammer and von Stuckrad (eds.), *Polemical Encounters*.

[9] Most notably this view emerges from the scholarship of Frances Yates on the "Hermetic tradition", and Faivre on esotericism as a "form of thought", the latter described in ways that come close to a check-list of what to expect of an enchanted worldview. Cf. Hanegraaff, *Western Esotericism*, 5-7.

has, as I will demonstrate in these final chapters, come at the cost of misrepresenting the actual content of much post-Enlightenment esotericism. As far as worldviews are concerned, I will suggest that an analysis of esoteric currents in terms of broader *responses to the problem of disenchantment* is a more promising way to go. It is, moreover, better equipped to accommodate the new historiography's heightened awareness of complexity, context, and change.

Finally, the *epistemic dimension* concerns specific attitudes to the question of how knowledge can be achieved. A focus on claims about unique access to knowledge, an emphasis on special capacities or organs for obtaining knowledge, as well as claims to knowledge that is superior, higher, or possesses special qualities such as enabling salvation and personal illumination, has been emphasised by a number of earlier approaches to esotericism.[10] While it has become clear that an emphasis on "gnosis" or "higher knowledge" cannot provide a sufficient basis for defining "esotericism" as such, it remains indisputable that certain extraordinary and usually extremely *optimistic* paths to knowledge have been very prominent in esoteric discourses. Together with the worldview dimension, epistemology is also the most obvious area where esotericism is confronted with the problem of disenchantment. How is knowledge understood, how can it be obtained, where does one draw the boundaries of what can be known, and how is the attainment of knowledge related to scientific practice, religious doctrine, and to the axiological concerns of meaning, value, and how to live one's life? To see where modern esoteric spokespersons stand on the problem of disenchantment, we must consider how the pursuit of "esoteric knowledge" faces these interrelated questions. Disenchantment is optimistic about scientific knowledge of the mechanical interactions of nature, but insists on strong limitations on what can be known beyond the strictly empirical. These limitations, I have suggested, largely follow the Kantian turn in epistemology, which also informed the discourse on agnosticism that arose in the late 19th century. In contrast to these sceptical views on the limits of human understanding, esoteric discourses typically hold that the totality of the cosmos is within reach of those

[10] E.g. von Stuckrad, 'Western Esotericism', 88-92; idem, *Locations of Knowledge*, 71-88; Hanegraaff, 'Reason, Faith, and Gnosis'; Arthur Versluis, 'What is Esoteric?'. One also thinks of the emphasis on imagination and mediation in Faivre's famous "form of though" model, which ultimately corresponds to the notion of a *mundus imaginalis* in the work of Henry Corbin. Cf. Hanegraaff, *Esotericism and the Academy*, 349-355.

who have the proper training, or possess the right keys. This put them in conflict with the call for disenchantment, and challenges the notion of a "disenchanted esotericism".

In the final two chapters I shall provide a few case studies that I think sufficiently illuminate these points, and help us build a more nuanced view on how modern esotericism has responded to the problem of disenchantment. The foundation of those discussions has already been briefly and programmatically introduced above. In the rest of this chapter, I will discuss each of the three aspects of esotericism-knowledge-disenchantment in more detail, embedded in previous discussions, and hopefully demonstrating the relevance of introducing the problem-focused view of disenchantment to the new generation of esotericism research.

1 Rejected Knowledge: Esotericism and Establishment

Categories such as "esotericism", "the esoteric", "occultism", and "the occult" have often been connected to notions of rejected and stigmatised knowledge.[11] Sociologists have typically had this aspect in mind when discussing "the occult", usually with an emphasis on the supposed "deviance" of esotericism.[12] Some historians have also emphasised the deviant quality of the esoteric, most notably James Webb, who placed rejected knowledge at the forefront of his two classic studies, *The Occult Underground* (1974) and *The Occult Establishment* (1976). The first of these books was originally entitled *The Flight from Reason* (1971), signifying that the rejected knowledge circulating in the 'occult underground' of the 19th century was primarily rejected by the new Establishment that emerged from the Enlightenment. Webb furthermore used this focus on rejected knowledge to explain the sometimes extreme *heterogeneity* of 19th and early 20th-century occultism: this quality arises from occultists' tendency to mix and blend various bits of knowledge that share merely the status of having been at some point rejected or stigmatised by the scientific, religious, or political Establishment. This is why we find post-revolutionary occultists longing for the *Ancien Régime* on the one hand,

[11] For the relation between rejected and stigmatised knowledge, see Michael Barkun, *A Culture of Conspiracy*, 23-29.

[12] See e.g. Edward A. Tiryakian (ed.), *On the Margin of the Visible*.

and curious mixes of spiritualism, socialism, and feminism on the other.[13] Appeal to rejected knowledge is just as much a sociological as a historical explanation of why post-Enlightenment occultism looks the way it does, and we should not be surprised to find that sociologists of religion have similarly emphasised the link between fascination for rejected knowledge and an apparently heterogeneous constellation of beliefs and practices in occult milieus. Colin Campbell's influential concept of the "cultic milieu" was, for example, based on this dynamic: the cultic milieu, he argued, was concerned mainly with the circulation of ideas that have been rejected by scientific and religious establishments.[14]

One important legacy of Webb's work is his acknowledgement of a powerful reaction to Enlightenment rationalism, and a deep fascination for what he calls "the irrational". Webb saw in this fascination a strong but neglected cultural impulse, with visible consequences in the literature, philosophy, and politics of the 19th- and early-20th centuries. The only major problem with the narrative is its conflict-oriented focus, based on a dichotomy between the rational and the irrational that is much more problematic than Webb assumed it to be. In fact, Webb's narrative followed the logic of the Enlightenment polemics that gave rise to the "rejected" status in the first place.[15] While Webb may thus have invited a more complex understanding of modern intellectual history by challenging the triumphalist view of Enlightenment progress, he was only able to do so by introducing the equally simplistic narrative of a "flight from reason" and a revolt against the Enlightenment. Defined in these terms, esotericism is always destined to be oppositional, reactionary, and deviant, and we would not expect

[13] For such political and ideological bifurcations in post-Enlightenment esotericism, see also Joscelyn Godwin's useful, but underdeveloped, distinction between an esotericism of "the right" and an esotericism of "the left". Godwin, *Theosophical Enlightenment*, 204. Cf. Hanegraaff, *Esotericism and the Academy*, 243-244.

[14] Campbell, 'The Cult, the Cultic Milieu, and Secularisation'. A focus on the deviance of the cultic milieu was taken much further by other sociologists, notably in Jeffrey Kaplan and Heléne Lööw (eds.), *The Cultic Milieu*. For a criticism of this focus on deviance, which I fully endorse, see Partridge, 'Occulture Is Ordinary'.

[15] This pattern is also characteristic of the Frankfurt school's usual criticisms of "the occult" and esoteric as a form of regressive thought, or even a primal irrationalism intrinsically connected to reactionary politics and totalitarianism. See e.g. Theodor Adorno, 'Theses against Occultism'. Cf. Hanegraaff, *Esotericism and the Academy*, 312-314.

to find it inside establishment discourses unless the establishment has itself been subverted by the "High Irrationalists". This was indeed what Webb saw happening in the early 20th century, with the rise of dangerous reactionary politics in an emerging "Occult Establishment".[16] The discovery of any "rational" aspect that may have been present in occultism, or any less diabolic "esoteric" aspect of establishment discourse, are effectively curtailed by the limits imposed on scholarship along these lines.

These implications are clearly unsatisfactory for this new historiography, which asks for increased attention to complexity. Nevertheless, a focus on rejected knowledge has recently been reconsidered as one of the most important dimensions of esotericism. In Hanegraaff's recent work, the problematic dichotomy on which Webb based his work is avoided by emphasising the longer and much more complex historical background of the rejection process itself, rather than taking its *outcome*, and the terms in which it was put during the Enlightenment, as a starting point for defining a field of interest. Thus, while Webb focused on a flight from "reason" as characteristic of post-Enlightenment occultism, Hanegraaff sees a much longer process of exclusion that essentially concerns the overcoming of *paganism*.[17] This was, however, a *philosophical* paganism, described by the 17th century scholar Jacob Thomasius as the origin of all heresies.[18] As described by Thomasius, philosophical paganism was founded on a rejection on the doctrine of *creatio ex nihilo*. This rejection led to two aspects that were problematic from the standpoint of Church orthodoxy: a doctrine of the eternity of the world and an emphasis on "enthusiasm" – the latter implying the presupposition that 'human beings could attain direct experiential knowledge (gnosis) of their own divine nature'.[19] The first phase of rejection thus took place in the Reformation era, when these "pagan" elements were attempted eradicated as unacceptable theological heresies. This process established a connection between a wide range of currents that shared, or were seen to share, pagan elements, thus laying the first foundation for a reified category of the "esoteric". A second phase of rejection followed with the onset of the Enlightenment,

[16] This aspect is particularly explored in Webb, *The Occult Establishment*. A more nuanced picture of these after all very important developments is provided in Nicholas Goodrick-Clarke, *The Occult Roots of Nazism*. Also cf. Mark Sedgwick, *Against the Modern World*.

[17] Hanegraaff, *Esotericism and the Academy*, 368-379.

[18] Ibid., 105, 370-373. Cf. my discussion at the end of chapter six in the present book.

[19] Hanegraaff, *Esotericism and the Academy*, 370.

where the category of heresies was reinvented, rather explicitly, in the new inventories of irrational follies and philosophical fallacies.[20]

Hanegraaff's new way of describing esotericism as rejected knowledge has two advantages when compared to earlier attempts. First of all, it adds a dimension of historical *specificity* to the process that was not properly developed in Webb's account. By paying attention to a *substantial* dimension of doctrinal content, it shows that knowledge was not rejected arbitrarily. The exorcism of paganism created a pattern. The first element of paganism which Thomasius objected to can be described as theological positions on the lines of "cosmotheism" and "panentheism", as discussed in chapter six. The derivative element of "enthusiasm" or "gnosis" points towards the purely *epistemic* dimension of esotericism, which we shall discuss shortly. Hanegraaff's thesis provides a way for relating these substantial, epistemic, and social issues. The second major advantage of the new way of approaching esotericism as rejected knowledge is that it avoids falling into the trap of simply repeating the structure of Enlightenment polemics. This is achieved by focusing on rejection "in the making" rather than rejection "ready-made": that is to say, a *constructionist* approach to the rejection process facilitates reflexivity on the part of the scholar, and avoids reifying and re-applying the categories that were produced by those very processes. This, of course, does not mean that the scholar becomes an *apologist* of "rejected knowledge", but it does force him or her to question the naturalness of characteristics that are created in polemical constructions of identity.

* * *

These considerations have consequences for the way we relate esotericism to disenchantment. As observed by Hanegraaff, the "disenchantment process" relates directly to the two-step exclusion process that gave rise to esotericism as rejected knowledge:

> … when Max Weber defined the eighteenth-century process of disenchantment as the disappearance of "mysterious and incalculable powers" from the natural world, he was

[20] Ibid., 373-374.

> describing the attempt by new scientists and Enlightenment philosophers to finish the job of Protestant anti-pagan polemics, and get rid of cosmotheism once and for all.[21]

'The attempt was unsuccessful', Hanegraaff quickly adds, pointing in particular to the Romantic reaction in which cosmotheistic/panentheistic perspectives continued to be explored. Such perspectives were, moreover, adapted to 'secular conditions', 'mutating into strange new forms'.[22]

Clinging to a conceptualisation of disenchantment as a process may, however, carry with it implications that are not entirely consistent with the principles of the new historiography. Assuming a similar function as "reason" did in Webb's narrative of rejected knowledge, "disenchantment" becomes a short-hand for the normative position of the Enlightenment establishment. On this view, rejecting disenchantment comes close to Webb's "flight from reason", while *adapting* originally "enchanted" perspectives to it and thereby creating 'strange new forms' bears the connotation of the inauthentic and illegitimate hybrid.[23] A problem-focused view of disenchantment avoids these tensions. Indeed, my analysis in previous chapters has suggested that post-Enlightenment establishments may not have been all that "disenchanted"; instead, we have seen scientists and philosophers well inside of the "academic mainstream" finding alternative solutions to the problem of disenchantment. This suggests that it was not only the attempt to get rid of cosmotheism that was unsuccessful; the attempt to create a stable disenchanted identity for the Western academy was not completed either.

While this already questions the naturalness of disenchantment as a process, and the role of science and the academy within it, another point is more directly relevant for the new view of esotericism as rejected knowledge. The problem-focused approach encourages looking at the complexity and diversity of responses to the different dimensions of disenchantment, seeing the final outcomes as less automatic or obvious. In line with the methodological individualism outlined at the beginning of this book,[24] the outcomes are dependent not on abstract "processes", but on choices made and strategies adopted by individuals. These individuals may differ wildly between

[21] Ibid., 371-372.

[22] Ibid., 372.

[23] Weber, 'Wissenschaft als Beruf', 509.

[24] See chapter one.

themselves when it comes to the specific agendas and interests they pursue, even when they appear to be treading the very same "esoteric" grounds. A flight from reason (rejecting the Enlightenment/disenchantment of the world) and a curious "disenchantment of magic" are not our only interpretive categories: instead, we find a myriad of different ways in which the problem of disenchantment is grappled with among those currents, persons, and systems of thought found in the reservoir of the "occult underground". In following this approach, we must keep our minds open about the actual relations between establishments and undergrounds, between "accepted" and "rejected" knowledge, and – essentially – the question of who gets to decide which is which.

2 Worldviews: The Disenchantment of Esotericism?

While we have noted a tendency in earlier scholarship to equate esotericism with a generally pre-modern "enchanted worldview", it has become increasingly clear that there is simply no such thing as *the* esoteric worldview.[25] Certain patterns can be recognised, based perhaps on the ideal-typical pagan theologies referred to above, but no final and stable description is possible. The usual suspects of positions rejected by the theological polemics of the Reformation can be identified primarily as worldviews stressing *panentheism*. As discussed in chapter six, panentheism covers positions that try to reconcile the immanence and transcendence of the divine in ways that emphasise the co-dependency of god and the world. Stressing immanence, however, also means that there is an inevitable conflict with disenchantment: the disenchanted world is an autonomous world, one that runs perfectly as clockwork without the disturbance of incalculable forces. Any legitimate theology in such a world must rely on radical transcendence. Under these conditions, it would seem, esoteric spokespersons are faced with a choice: either reject the project of the Enlightenment, or get rid of immanence and "magic" in any substantial sense. This latter requirement would have to be met by any truly "disenchanted esotericism".

The notion of disenchantment as a process has indeed been used by several recent scholars of esotericism to point out important changes between the worldviews

[25] Cf. Hanegraaff, *Western Esotericism*, 69.

of modern esotericism and those of earlier times.[26] Adopting a problem-centred view of disenchantment reveals more complexity and variety in post-Enlightenment esoteric worldviews than has typically been granted. This goes particularly for the notion of 19th and 20th century occultism and spiritualism being forms of "secularised esotericism", adapted to the conditions of a disenchanted world. While more or less fully disenchanted worldviews may be found in some post-Enlightenment systems, and while these do certainly represent a novel direction when compared to earlier forms of esotericism, the vast majority of post-Enlightenment esoteric worldviews appears to have answered the problem of disenchantment in much more ambiguous ways. Thus, for example, Hanegraaff has shown that the Swedish natural philosopher and visionary Emanuel Swedenborg (1688–1772), standing on the brink of the Enlightenment, did *not*, as has often been assumed, primarily represent a continuity of older esoteric ideas, such as the doctrine of correspondences.[27] Swedenborg's worldview was radically different from earlier esoteric notions: his view of nature followed the mechanistic natural philosophy of Descartes, his anthropology appears to have similarities with that of Hobbes, and his epistemology was inspired by John Locke's *tabula rasa* empiricism. Even in Swedenborg's later visionary phase, he never relinquished these natural-philosophical views, but attempted to harmonise them with an "enthusiastic" theology.[28] He did this in a way that was remarkably well adjusted to the disenchantment of the world, namely, by operating with a complete separation between the natural world and the world of the divine. In fact, Swedenborg's notion of correspondences was designed precisely to bind these separated spheres together by *analogy*.[29] Swedenborg started his *Hieroglyphic Key to Natural and Spiritual Arcana by Way of Representations and Correspondences* by establishing that the concept of *conatus* in the natural world, denoting motion (literally "effort", or "striving"), corresponded to the concept of "will" in the human world. These, finally, corresponded to the concept of "divine providence" in the higher world. Such correspondences did however *not* mean

[26] Most notably Hanegraaff, 'How Magic Survived the Disenchantment of the World'; idem, *Western Esotericism*, 125-6; but also von Stuckrad, *Western Esotericism*, 133-135; Alex Owen, *The Place of Enchantment*, 1-16, passim.

[27] E.g. Hanegraaff, *Western Esotericism*, 125-126.

[28] Cf. Hanegraaff, *Swedenborg, Oetinger, Kant*.

[29] See ibid., 3-11.

that there was a direct link between the three worlds, so that, for example, mechanical *conatus* was but an *expression* of divine providence, or that human will was bound by the action of god. Relations were mirrored, but there were no direct causality between the worlds. The worlds were kept strictly apart, ensuring the complete mechanical self-sufficiency of nature. In fact, Swedenborg became convinced that natural science could tell nothing whatsoever about the human or the divine levels, and thus excluded any discussion of nature as such from his later theological writings.[30] He followed the dictums of disenchantment all the way, and held natural theology to be an impossible endeavour. When Swedenborg himself was able to lay out all the secrets of heaven, and describe the correspondences between the separate worlds, that was solely due to a continuation of *revelation*, an initiative on the part of the divine that had chosen to bestow higher secrets upon the Swedish philosopher. A mere mortal could never have gained such knowledge on his or her own initiative.

Comparing Swedenborg with earlier esoteric writers, it is hard to avoid the conclusion that we are truly dealing with an Enlightenment innovation that results in a fully "disenchanted" form of esotericism. Nothing is left of "living nature", panentheism is dispensed with for some form of theism, and the promise of natural theology is scrapped.[31] The principle of correspondences, which had been a way to postulate mediating connections between all things in the cosmos, links that are neither materially causal nor the result of invisible "occult forces", are nowhere to be found.[32] Instead, something quite different is expressed by that same word, namely a set of purely analogical links between concepts on three different levels of reality that otherwise have no points of contact with each other. Unlike its Renaissance forbear, Swedenborg's concept of correspondences could hardly be utilised for magical purposes, whether the making of talismans with correspondences to astrological principles, or

[30] Ibid., 8.

[31] In fact, it appears legitimate to ask whether Swedenborg properly belongs to esotericism at all. Perhaps the best reasons for including him are to be found in the reception of his thought, and the social position of Swedenborginanism after the Enlightenment, rather than in any substantial feature of his doctrines, or historical relation to older esoteric material.

[32] Correspondences, of course, being the first of the four intrinsic components of esotericism as a form of though in Faivre's system. Faivre, *Access to Western Esotericism*, 10-11. For occult forces, cf. Hanegraaff, *Esotericism and the Academy*, 177-191.

healing though herbs or minerals with appropriate corresponding connections.[33] Such natural and astral magic was rendered just as impossible in Swedenborg's disenchanted esotericism as in the best Enlightenment philosophy.[34]

While we can thus say that Swedenborg exemplifies a response to the problem of disenchantment that embraces its most important dimensions, separating mechanical nature from a transcendent spirit world, later esoteric spokespersons have solved this problem in very different ways. Thus, I find it problematic to take Swedenborg's example as a model for others attempting to 'adapt esotericism to a disenchanted world',[35] as Hanegraaff appears to do:

> it [Swedenborg's system of correspondences] proved highly influential. From the nineteenth century on, the fundamental notion of two "separate-yet-connected planes" of reality became a bedrock assumption of spiritualism and occultism, because (as was already the case in Swedenborg) it *protected spiritual realities from scientific falsification and disenchantment*. We are not dealing here with the holistic universe of Plotinian or Renaissance correspondences, but with an essentially *dualistic* concept (modeled partly on Cartesian dualism but partly also on Kant's distinction between a noumenal and a phenomenal world).[36]

That such a protection against scientific falsification through the adoption of a strictly dualistic worldview became a bedrock assumption can certainly be questioned from a historical point of view. Rather than insulating the spirit-world from empirical reality, 19th century spiritualists are frequently seen to emphasise the potential of their practices to *empirically demonstrate* the presence of continuous contact between the

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[33] For a venerable compendium of such uses of correspondences, see in particular the two first books of Cornelius Agrippa's *De occulta philosophia*, on "natural magic" (e.g. magic in the sub-Lunar world) and "astral magic" (pertaining to the supra-Lunar world of the planets and the Zodiac) respectively.

[34] Hanegraaff has demonstrated that Swedenborg even appears to be in complete agreement with Kant's epistemology, expressing that it is entirely impossible for humanity, under normal circumstances, to gain knowledge of any transcendent realities that there might be. The closeness of the two is remarkable in light of Kant's famous polemic against Swedenborg, in which Kant had taken liberties to cover up his own earlier fascination for the Swede's system, even opting to deliberately misspell his name. See Hanegraaff, *Swedenborg, Oetinger, Kant*, 104-107.

[35] E.g. Hanegraaff, *New Age Religion and Western Culture*, 423.

[36] Hanegraaff, *Western Esotericism*, 126. Emphasis added.

"material" and "spiritual" worlds, arguing that the truth of the matter can be settled by scientific means. The ambition is quite the opposite of Swedenborg's Cartesian/Kantian approach: instead of protecting the spirit world *from* scientific criticism, steps are made to bring it directly into the purview of empirical science. Meanwhile, occultists working with ritual magic continued to stress the possibility of creating direct material effects in this world through magical means, sometimes even through the adoption of systems of correspondences that are much closer to Agrippa than to Swedenborg. One only has to think of the elaborate procedures for producing and consecrating talismans by the use of divine names, astrological magical squares, and the employment of "correct" metals, as taught in the late-Victorian Hermetic Order of the Golden Dawn; these talismans were produced and used for this-worldly magical purposes such as healing.[37] Ritual magicians' common interaction with demons, angels and other spiritual beings, literally understood to be independently existing spiritual entities, furthermore attests to a worldview in which different "planes" are closely knit together.[38] In some cases, most notably that of Aleister Crowley, we even see concentrated attempts at making the assumed magical realities as empirically available as possible, in the explicitly stated interest of putting an end to other occultists' evasive attitude towards methods of falsification.[39]

Even if we look at some of those who have on paper been most directly influenced by Swedenborg's system we find that they are typically not interested in keeping the material and spiritual worlds separate in any strict sense. The spiritualist Andrew Jackson Davis (1826–1910), for example, explicitly adopted Swedenborg's notion of correspondences, but showed little interest in continuing his dualistic project.[40] Davis' ambition was to establish a 'Philosophy of Spiritual Intercourse' rather than keeping the two worlds neatly separated. 'There is no matter more incontestably demonstrated than the communion of men with spiritual existences',[41] Davis writes, thus implying not only that the spirit world can be a subject of true, scientific knowledge

[37] For examples of the practical magical operations of Golden Dawn members, see e.g. Ellic Howe, *Magicians of the Golden Dawn*, 104-109; cf. Asprem, *Arguing with Angels*, 57-68.

[38] For this point, see e.g. Asprem, *Arguing with Angels*; Pasi, 'Varieties of Magical Experience'.

[39] Cf. Asprem, 'Magic Naturalized?'.

[40] E.g. Davis, *The Harmonial Philosophy*, 249-252.

[41] Ibid., 377.

(through 'demonstration'), but that such true knowledge has already been established beyond reasonable doubt. Stressing the importance of animal magnetism and artificial somnambulism for intercourse between the worlds, it also becomes clear that special material functions of the brain and body are involved with spirit contact, thus implying that there are indeed *causal* links between a "material" substratum and intercourse with the spirit world.[42] Again in stark contrast to Swedenborg, the consequence is that material techniques can be employed to *induce* and *actively reach out* to gain knowledge of higher worlds. Direct knowledge of the spirit world is within the reach of humanity, and not dependent on divine initiative. In one of the final chapters of the edited compendium of Davis' life's work, *The Harmonial Philosophy*, entitled 'The Certainty of Spiritual Intercourse', we thus read, without ambiguity: 'Intercourse between minds in this world and minds in the other is just as possible as oceanic commerce between Europe and America, or the interchange of social sympathies between man and man in daily life'.[43] Nothing now seems left of the dualistic separation between 'this world' and 'the other'. The relation between the two worlds is likened to the relation between the continents; separated by oceans they may be hard to travel between, but there is no doubt about the *possibility* of such crossings. The comparison with ordinary "interchange of sympathies" is even more revealing: spirit communication is merely a more complicated form of intersubjectivity, in principle no less problematic than the communication between living creatures in *this* world. While Swedenborg's philosophy held that all minds are *already* in the "spirit world", even when incarnated in the physical world, it is clear that the worlds Davis talks of are rather different: the two worlds that are to be bridged are those of the "everyday" world in which people move and think and feel, and the "other side" inhabited by deceased persons and other spiritual beings. These two worlds are like two continents, and can be crossed by those who know how.

Adopting a dualistic separation of worlds may have been a "philosophically correct" way to save magic in modernity, withdrawing it from any possible rational criticism and making it thus compatible in principle with a "disenchanted world". It would be analogous to Weber's intellectual sacrifice, requiring a leap of faith since no rational and empirical reasons for belief are provided. Swedenborg, who was himself a

[42] Ibid., 379-385.

[43] Ibid., 403.

sophisticated scientist and philosopher steeped in Enlightenment thought, may in this sense be reconstructed as an ideal example for later occultists to follow. However, this would be very much an idealisation of how history *should* have looked like, rather than how it *actually does* look: post-Enlightenment esotericists simply did not follow the example of the Swedish natural philosopher. Their intentions were sometimes quite the opposite of Swedenborg's. The refusal of modern occultists to play by the rules of disenchantment must be seriously acknowledged, and so must its consequences: since post-Enlightenment esotericists so often did *not* separate the worlds properly, but rather tended to emphasise the empirical consequences of their beliefs and practices, the threat of disconfirmation and a conflict with the empirical sciences have remained serious challenges that esoteric spokespersons have had to grapple with.

The problem of disenchantment appears, in short, to have been met in different ways by different esoteric spokespersons. A protection of the spirit world from disenchantment and scientific rationality is certainly not a necessary component of post-Enlightenment occultism; indeed, it appears to be quite rare.[44] I argue that post-Enlightenment esoteric discourse typically emphasises an *empirical* and would-be "scientific" dimension. Rather than insisting on a separation of worlds, occultists typically assume the continuity of nature. The worldviews of 19th- and early 20th-century occultists often appear to be in the current of "open-ended naturalism" that we have discussed in earlier chapters, rather than in the disenchanted mode of separating the knowable from the unknowable. While Cartesian dualism and Kantian epistemology might have been strategically reasonable options for occultists to follow, I hold that in actual practice they more often came to *challenge* the fundamentals of those Enlightenment epistemologies. Most of modern esotericism in fact reads as a wholesale rejection of Kant's critical philosophy, both its epistemology and its moral philosophy. This did not mean that occultists rejected all contemporary intellectual traditions,

[44] This statement is based solely on the author's impressions rather than on a systematic study of 19th century occultism in all its forms and facets. A comprehensive study of a representative selection of occultist authors' relation to disenchantment would be a welcome contribution to the academic debate on the disenchantment of magic/secularization of esotericism. For previous contributions, see e.g. Hanegraaff, 'How Magic Survived the Disenchantment of the World'; Asprem, 'Magic Naturalized'; idem, *Arguing with Angels* (especially pp. 69-82); Marco Pasi, 'Varieties of Magical Experience'.

however: instead, I argue that they could challenge the Kantian limitations of knowledge by playing on pre-existing tensions within *naturalistic* discourse.

The occultists' emphasis on a naturalistic and scientific discourse, *challenging* rather than accepting the "two worlds"-thesis of Kantians and liberal agnostics, has caused occultists to run into the very same problems faced by open-ended naturalists in psychical research. By emphasizing empirical dimensions of esoteric knowledge claims rather than insulating them from the reach of science, the field also opened the door for falsification.

3 Epistemology: Gnosis and the Expansion of Reason

The discussion of esoteric worldviews and the problem of disenchantment has led us directly to the questions of esoteric epistemologies proper: how is higher knowledge actually thought to be *achieved* in esoteric discourses? An emphasis on the acquisition of unique knowledge through equally unique channels has often been part of definitions of esotericism. Antoine Faivre's definition of esotericism as a form of thought emphasised what we might call certain cognitive habits, which included a reliance on analogical thinking ("correspondences") and a creative use of the imagination ("mediation/imagination"). The latter element was clearly related to Henry Corbin's more ontological concept of the *mundus imaginalis*, denoting an "order of reality" that could be reached through the faculty of the imagination.[45] We might silently pass by the many attempts to define esotericism in terms of "secrecy". These too emphasise a form of epistemology, but in a purely sociological sense, which is far more universal than the kind of knowledge relations that concern us here.[46] More relevant to our concerns are the emphasis on 'claims to higher knowledge', as laid down in Kocku von Stuckrad's conceptualisation of "esoteric discourse", and Hanegraaff's distinction between "reason",

[45] Corbin, 'Mundus Imaginalis, or the Imaginary and the Imaginal'. For the relation between Corbin and Faivre, see Hanegraaff, *Esotericism and the Academy*, 349-355.

[46] That is not to say that a sociological approach to secrecy is uninteresting in its own right, nor that it is irrelevant to the field of esotericism; it clearly *is* relevant, and in fact deserves to be developed further. Some useful references include Georg Simmel, 'The Sociology of Secrecy and of Secret Societies'; Hugh Urban, 'Elitism and Esotericism'; idem, 'The Torment of Secrecy'; idem, 'The Secrets of Scientology'; von Stuckrad, *Locations of Knowledge*, 54-59. For some effects of the esotericism/secrecy connection when *reversed* in the context of conspiracy culture, see Asbjørn Dyrendal, 'Hidden Knowledge, Hidden Powers'.

"faith", and "gnosis" as three ideal-typical approaches to knowledge.[47] The latter distinction will be of relevance for our discussion, so we should clarify the technical meanings it implies.[48]

"Reason" is defined here as claims to knowledge that rest on the two principles of *communicability* (the claim is communicated in precise discursive language) and *verifiability* (it is formulated such that the truth or falsity of the claim can, in principle, be independently checked by others). In this special sense, reason is exemplified by the standards for knowledge claims characteristic of science and scholarship, but also of all pragmatic "know-how", everyday knowledge where reliability has an undeniable practical relevance. By contrast, "faith" denotes a type of knowledge claim that remains equally communicable, expressed in clear discursive language, but which content lacks the intersubjective verifiability demanded of "rational" statements. This category would be best exemplified by dogmas that have to be taken on the authority of revelation. By extension, one could consider that many other claims are *de facto* taken on the basis of faith (or "confidence") in authority rather than by actual independent verification of the claim. This is in fact how most people, by practical necessity, interact with any field of knowledge of which they are not a specialist. Including these examples in the category of "faith" would, however, miss the point of the distinction: claims based on "reason" differ from claims based on "faith" not by reference to *why* people happen to accept or reject a certain claim, but rather whether or not independent dis-/confirmation of the claim is *possible in principle*. Finally, "gnosis" stands in contrast to both reason and faith: these "claims" (to the extent that they can still be considered as such) are not only withdrawn from any possible independent corroboration by others, but are also described as a non-discursive, *experiential* type of knowledge, which cannot be expressed in clear and unambiguous language. It constitutes a type of knowledge that is (rhetorically) said to transcend reason, being beyond its grasp and thus also impossible to impart to others except by veiled, symbolic language, or through administering ways

[47] For the former, see e.g. von Stuckrad, 'Western Esotericism', 88-92; idem, *Locations of Knowledge*, 43-64; for the latter, Hanegraaff, 'Reason, Faith, and Gnosis'.

[48] The following account is based on Hanegraaff, 'Reason, Faith, and Gnosis'; idem, *Western Esotericism*, 87-101. While my account tallies with Hanegraaff's conception of this distinction, I have emphasised certain nuances that I find particularly important, and which moreover appear to have remained implicit or ambiguous in the original formulations.

for achieving the same direct experiential knowledge. The knowledge itself, however, is deemed impossible to communicate directly or verify through other means.

The *possibility* of attaining gnosis, or absolute, higher knowledge of a supra-rational kind, is a typical promise of esoteric worldviews. This phrasing must be noted carefully: the focus is not on definite *claims* about superior, higher knowledge that has already been obtained; instead, it is the promise that higher knowledge *can* in principle be achieved by individual human beings that matters. This means a slight, but significant, departure from von Stuckrad's notion of "esoteric discourse" as claims of higher knowledge. The primary focus should be on the prescribed ways and methods of *achieving* such knowledge, rather than on any claim about what has been revealed.[49] However, it also implies that we must be very careful not to give the impression that we refer to gnosis as *really being* an experiential, non-discursive, non-verifiable form of knowledge as such: that would be methodologically unsound, since, by definition, there can be no traces of any such knowledge for the scholar to access. What we do have is the discursive statement that such (non-discursive) knowledge is possible, or has been attained; possibly, there are also claims about how such knowledge can be achieved by others. On top of these, there are the potentially significant *social* effects of making such claims, including the elevations of status and power that might be achieved by establishing oneself, discursively, as the bearer of a non-discursive, non-verifiable higher knowledge, the guardian of a treasure chamber that no one has ever seen except by borrowing the guardians' own keys.[50] All these effects can be studied, but it means that we are studying discursive *claims* to gnosis, construed as a *rhetoric* of "ineffability" and "non-verifiability", and not "gnosis" as an actual type of knowledge.[51]

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[49] Which was a secondary, but nonetheless important, dimension to von Stuckrad's discursive model; cf. 'Western Esotericism', 91-92; idem, *Locations of Knowledge*, 60-64.

[50] This latter point reminds us of the function of secrecy as a monopolisation of knowledge, making of it a commodity that can function as symbolic capital and be exchanged for *social* capital (as, for example, in secret societies). It also reminds us of the experiential claim's strategic discursive function. For the former, see e.g. Simmel, 'The Sociology of Secrecy and of Secret Societies', 464; Pierre Bourdieu, 'The Forms of Capital'. For the latter, see Olav Hammer, *Claiming Knowledge*, 331-440.

[51] Olav Hammer's work on "epistemological strategies" in modern Western esotericism may in fact be seen as a complete discursive redefinition of the faith-reason-gnosis typology: what he refers to as narratives of "personal experience" comes close to a rhetoric of "gnosis", while "terminological scientism"

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Disenchantment defines the antithesis of the worldviews that have, historically, supported esoteric epistemologies stressing gnosis. While this has caused esoteric spokespersons since the Enlightenment to face the problem of disenchantment, leading to a number of innovative worldviews, the problem is even more acute for epistemology proper. Disenchantment concerns the boundaries of reason, and embracing it fully means that any "higher" realities must remain off limits for human rational inquiry. According to the disenchanted point of view, it is only by an intellectual sacrifice that "knowledge" – or at the very least *conviction* – of such things can be held. On a superficial reading, one might suspect that gnosis should still remain possible in such a world; after all, gnosis is thought to *complement* reason by bursting through the boundaries that limit its reach. Those who claim gnosis would actually *agree* that reason as such is limited: claiming higher knowledge through gnosis is not the same as claiming rational and scientific knowledge about the divine, as Weber's "charlatans" and "self-deceived" individuals would do. If analysed closer, however, the problem is more complicated. From a theological as well as an epistemological point of view, the problem with claims to gnosis is that they suppose an innate *potential* in human beings to attain such knowledge *by their own initiative*, thus actively transcending the boundaries of this "disenchanted" world. This means that an absolute intellectual sacrifice is never needed in the first place. One can rely on one's innate capacity for gnosis to attain the knowledge that reason cannot grasp, and one can get it without having to trust the revelations of a supreme being.

This subtle problem with gnosis in a disenchanted world may be illustrated by returning briefly to the solution provided by Swedenborg. As we saw, Swedenborg embraced disenchantment in most relevant respects, and imposed a clear separation between the natural world and the spiritual world. As one would expect from a philosophical mind valuing consistency, this had epistemological implications. As Hanegraaff has noted with some surprise, Swedenborg was at heart a *Kantian*:

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is a strategy referring to "reason". "Appeal to tradition" can be construed as a form of "faith"-oriented "knowledge by authority". Cf. Hammer, *Claiming Knowledge*.

> Remarkably enough, Swedenborg appears to have been in complete agreement with Kant's basic epistemology: it is impossible for human beings to discover the truth about heaven by themselves, for our common human faculties are simply inadequate. But whereas Kant concludes that therefore we cannot attain any knowledge of heaven, Swedenborg claims that the abyss has been bridged "from the other side," that is to say, by the Lord himself. Kant and Swedenborg agree that humanity cannot *discover* the truth; but unlike Kant, Swedenborg claims that it can be *revealed* to human beings. He knows this because it has happened to himself.[52]

Swedenborg's disenchanted view may first appear as a kind of personal gnosis, but it is important to note that he considered his visions ('things heard and seen') to have been achieved by divine initiative – *not* by personal exaltation. Theologically speaking, Swedenborg looks more like a prophet within a faith-based system: there is no promise that other people can experience the truth for themselves, as that would require faculties of the soul that simply do not exist. They can, however, faithfully follow the doctrines revealed to Swedenborg from the other side. While the prophet and his revealed doctrines would definitely appear heterodox, the theological explanation of *how* knowledge had been achieved is entirely in line with theism. It relies on the active initiative of the creator.

If Swedenborg had to fall back on a theistic model, leaning in the end more on "faith" than on "reason", most occultists and other modern esoteric spokespersons appear to have taken a quite different view on things. Occultists have usually been inclined to distrust revelation (divine initiative), and emphasise a hidden human potential for extraordinary knowledge. Human beings *can* attain knowledge about higher realities, by their own initiative, either by training certain "occult" faculties of the mind, or through the use of special ritualistic, magical keys. We may think of "sensitives" going into a trance and thereby achieving contact with spirits and visions of other worlds, or the use of mesmeric techniques, inducing states of "artificial somnambulism".[53] We can think of psychical researchers and spiritualists theorising about telepathic powers and clairvoyance, whether across space and time, or between

[52] Hanegraaff, *Swedenborg, Oetinger, Kant*, 104-105.

[53] Numerous examples of this from the early 19th century are collated and discussed in Adam Crabtree, *From Mesmer to Freud*. See also the peculiar case of Friederike Hauffe (the "seeress of Prevorst") and her "magnetic" physician, Justinus Kerner; Hanegraaff, 'A Woman Alone'.

the worlds.[54] Then there are the techniques for astral travel, as practiced both by theosophists and by ritual magicians,[55] and the use of grand magical ceremonies to call forth spirit entities, converse with angels and demons, or send the magician on a disembodied journey to higher realms.[56] There is even the use of hallucinogenic drugs to achieve "higher" insights through manipulating the biochemistry of the brain, in what may be called "entheogenic esotericism".[57]

While all these practices for attaining higher knowledge entail manipulative actions in *this* world, emphasising the agency and initiative of the individual, it is intriguing to note that the notion of gnosis remains quite problematic for most of them. Of course, a perfect match with historical reality should not be required from an ideal type. Nevertheless, many of the extraordinary knowledge practices associated with post-Enlightenment esotericism appear less like gnosis and more like *expansions of reason*, in the special sense defined above: in both theosophical and ritual-magical practices of astral travel, for example, the practitioner is usually bent on describing his or her visions discursively, in accurate detail (not symbolically or allegorically), as if writing ethnographies of other worlds.[58] Furthermore, the visionary will often emphasise corroboration by external evidence (especially when astral travel is performed *within* the ordinary world), or even devise methods for other practitioners to independently verify the claims that have been made and report back on their findings. These practices seem best explained as extensions of "reason", in directions that defy the disenchanted call for an intellectual sacrifice. Occultism, quite contrary to insulating higher knowledge from rational criticism by way of a separation of "two worlds", is more often characterised by an aspiration to reject the intellectual sacrifice, and extend

[54] Examples were discussed extensively in previous chapters.

[55] For the practice of astral travel in first- and second-generation Theosophy, see e.g. John Patrick Deveney, *Astral Projection or Liberation of the Double and the Work of the Early Theosophical Society*; cf. Charles Webster Leadbeater, *The Astral Plane*. For astral travel in the context of ritual magic, see e.g. Francis King (ed.), *Astral Projection, Ritual Magic, and Alchemy*; cf. Owen, *The Place of Enchantment*, chapters two and six; Asprem, 'The Golden Dawn and the O.T.O.'; idem, *Arguing with Angels*, 63-68.

[56] See references in previous note.

[57] E.g. Hanegraaff, 'Entheogenic Esotericism'.

[58] A clear example of this ethnographic style is found in Leadbeater, *The Astral Plane*. See, however, also the accounts of astral travellers in the tradition of the Golden Dawn, as collected e.g. in King (ed.), *Astral Projection, Ritual Magic, and Alchemy*.

reason to the higher worlds. Moreover, and following the thrust of my general argument, this expansion is made possible by relating reason to an open-ended naturalism, rather than to the epistemic limitations of disenchantment. I suggest that we see answers to the problem of disenchantment that amount to a partial *naturalisation* of esotericism.[59] Such naturalisation entails new negotiations of reason and gnosis, informed by naturalistic (rather than strictly Kantian) epistemology, but often in opposition to established naturalistic *ontologies*. We shall return to this discussion in light of specific examples in the two following chapters.

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There is, however, another aspect of esoteric claims to knowledge that is not so easily grasped by the reason-faith-gnosis distinction, namely the wide range of epistemic strategies that could be labelled "esoteric hermeneutics".[60] It is, perhaps, symptomatic that the examples we have been discussing so far, and the conceptual tools that have guided us, have focused on *facts* and *explanations*, glossing over the preoccupation of much esoteric discourse with *meaning*, *signification*, and *understanding*. Have we been misled by post-Enlightenment esoteric spokespersons' frequent alignment with the natural sciences to ignore their relationship to the epistemology of the *humanities*, that is, to *hermeneutics*? As Hanegraaff has recently pointed out, modern esotericism has displayed a remarkable *lack* of interest in modern research in the humanities, entirely disproportionate with its unprecedented enthusiasm for natural science.[61] I suggest that this imbalance is deceptive: while it may superficially look like esotericism is closer to natural science than to humanistic scholarship, from an epistemic point of view the opposite is really the case. Esoteric methods for obtaining knowledge and understanding have typically been concerned with interpretation of meaning rather than explanation of facts. Why, then, the disregard for current scholarship in the humanities? Perhaps this is exactly what we would expect: the very proximity in

[59] This is a generalisation of an argument I first articulated with reference to Aleister Crowley's conception of magic. See Asprem, 'Magic Naturalized?'.

[60] A previous attempt to operationalize this concept can be found in von Stuckrad, *Locations of Knowledge*, 89-113. While von Stuckrad focuses explicitly on textuality, my understanding is, as will be seen, somewhat broader.

[61] Hanegraaff, *Western Esotericism*, 92.

method makes the humanities a more serious challenge to esoteric claims about meaning and interpretation than the natural sciences are. The new interpretive methods that have been designed for scholarship in the humanities since the early modern period, from precise philology to source-driven archival research, from the practice of hermeneutical suspicion to advanced methods for content analysis, have completely undermined some of the most central methods by which meaning and knowledge has typically been constructed in esoteric discourses. In the modern humanities, the esotericist is likely to be confronted with disconfirmations of *interpretation* and with methodologies that are radically opposed to his own approach to knowledge. He is less likely to be confronted in this way by the natural sciences. Instead, physics, chemistry, and biology have continued to provide numerous exciting "matters of fact", begging to be interpreted. Often enough, scientists have themselves encouraged such interpretation through their popularisation strategies, or their own attempts to do the job of philosophers and theologians.[62]

A brief consideration of esoteric hermeneutical practices is important for situating esotericism in the broader landscape of post-Enlightenment knowledge cultures in which the problem of disenchantment looms. It provides another avenue for exploring the mode of knowledge production in esoteric milieus vis-à-vis the separation between facts and values, and conflicts over the reach of naturalism. We need to remember that modern hermeneutics was itself developed in this very context, in the struggle of the humanities to define its scientific identity and create methodologies that were distinct from those of the natural sciences.[63] Conflicts concerning the methodology of the humanities have by no means ceased, or culminated, in a clear scholarly consensus.[64] It is not so surprising, then, that similar problems have continued to be

[62] Abundant examples of this were seen in Part Two of this book. See also von Stuckrad, *Locations of Knowledge*, 89-91.

[63] These debates are extremely complex. See e.g. Charles R. Bambach, *Heidegger, Dilthey, and the Crisis of Historicism*.

[64] With the exponential numerical growth of the Western university sector and of academic publishing since the Second World War, the question of what constitutes the proper methodology/ies of the humanities has become more complex than ever before. Avoiding a discussion about the vast range of methodological positions in the humanities today (which would require a multi-volume work in its own right) it will suffice to note that the somewhat naive distinction between an "interpretive" (*Verstehende*) humanities and an "explanatory" (*Erklärende*) natural science, not to say the notion of "two worlds" in the

sustained also *outside* of the humanities strictly speaking, including in the circles of amateur scholars that partake in esoteric discourses.

The background for what I term esoteric hermeneutics lies in scholarly practices that were common prior to the mathematicization of nature and the advent of modern textual criticism. It is related to the general "episteme" of the Renaissance: the readability of nature,[65] the so-called "emblematic worldview",[66] and, significantly, to the practices of correspondence, analogy, and concordance.[67] Furthermore, it is connected to the ancient wisdom narratives of *philosophia perennis* and *prisca theologia*, functioning as master narratives guiding interpretations and comparisons of textual material.[68] As far as hermeneutic practices are concerned, we may think about the logic of similitudes, and the interpretation of natural occurrences as signatures, or omens, pregnant with significance. In a more technical sense, we may think of specific exegetical methods that have been developed in order to reveal hidden layers of meaning, and create harmony in texts that appear on the surface to be in conflict with one another. Of major significance in this respect are the hermeneutical techniques developed in Jewish kabbalah, imported and translated to a Christian context by such scholars as Pico della Mirandola (1463–1494), Johannes Reuchlin (1455–1522), and Guillaume Postel (1510–1581), and developed in yet new directions by natural philosophers such as John Dee (1527–1608/9) and Christian Knorr von Rosenroth (1636–1689). Sometimes, such hermeneutical methods have been connected with

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academy famously suggested by C. P. Snow, are hardly satisfying for grasping the complexity of research in the humanities. To mention only a couple of examples, we currently see the development of approaches based on cognitive psychology and neuroscience gaining ground in the humanities, particularly in anthropology and religious studies, suggesting fruitful combinations of "explanation" and "interpretation"; furthermore, the development of new quantitative approaches in historical research have been made possible by the digital revolution of recent decades. The latter field appears to have a significant potential, and is only now starting to become institutionalised with its own journals, such as *Digital Humanities Quarterly* (est. 2007), and *Journal of Digital Humanities* (est. 2011). While the predictive "psychohistory" of Isaac Asimov's *Foundation* series remains out of sight for now, it is clear that there has been a quantitative and explanatory potential in the humanities that is only now being systematically developed.

[65] E.g. Hans Blumenberg, *Die Lesbarkeit der Welt*; cf. Foucault's description of the "prose of the world"; Foucault, *The Order of Things*, 17-45.

[66] William Ashworth, 'Natural History and the Emblematic Worldview'.

[67] E.g. Faivre, *Access to Western Esotericism*, 10-14.

[68] On this theme, see Hanegraaff, *Esotericism and the Academy*, 7-12

contemplative techniques in quests for what could be considered experiences of gnosis;[69] other times, it could be expanded to the study of nature itself.[70] In all cases, they provided interpretive techniques for uncovering higher *meanings* that were veiled or hidden from plain sight. As such, it is important to point out that one does not have to go to Jewish and Christian kabbalah to find esoteric hermeneutical approaches to the study of scripture: on the contrary, scholastic traditions of biblical scholarship had already developed a sophisticated apparatus for reading texts on a variety of levels by the middle ages.[71] A number of rules for interpreting scripture were recognised by the 12th century, many of which can be traced back to the early church fathers. Eventually, four senses of scripture became canonical in the Western church's approach to exegesis: a *literal* sense (*sensus literalis*); an *allegorical* sense (*sensus allegoricus*), concerning symbolic meaning in view of church doctrine; a *moral* sense (*sensus moralis*), which pertained to the moral conduct of the individual; and the higher *anagogical* sense (*sensus anagogicus*), which pertained to higher spiritual truths, the nature of God, and the secrets of eschatology.[72] Through the practice of anagogy, the scholastic theologian of the pre-reformation Roman church had access to what must essentially be seen as an "esoteric" hermeneutical tool for revealing hidden layers of higher meaning in textual material.

How can the concept of esoteric hermeneutics help us shed light on Enlightenment and post-Enlightenment struggles with the problem of disenchantment? Returning to one of our main examples in this chapter, the threshold figure Swedenborg, we might make an additional observation concerning his reformed doctrine of correspondences. I mentioned that these were designed to explain some sort of connection between the material, human, and divine worlds, without postulating any causal chains between them. Thus we get correspondences of meaning between concepts performing similar *functions* on each level, such as "will" in the human sphere,

[69] I am thinking, for example, of the medieval kabbalist Abraham Abulafia, whose techniques for "ecstasy" included the use of Hebrew letter permutations, e.g. temurah and notarikon. See Moshe Idel, *The Mystical Experience in Abraham Abulafia*.

[70] As, for example, in some of the natural-philosophical work of John Dee. On this topic, see especially Nicholas Clulee, *John Dee's Natural Philosophy*; cf. Deborah Harkness, *John Dee's Conversations with Angels*.

[71] See Henri du Lubac, *Medieval Exegesis*, vol. 1, 15, 117-160.

[72] Ibid., 15-74.

and “providence” in the realm of the divine. In view of the considerations mentioned above, it is tempting to say that Swedenborg rejected an esoteric *epistemology* – made impossible in a disenchanted world – while adopting a type of esoteric *hermeneutics* by which truth concerning higher realities could be perceived both in nature and in man, by applying the right interpretive keys. While the keys themselves were “revealed”, their use for reflecting on the divine comes close to an anagogical reading of nature.

As a heuristic proposal, I suggest that we can distinguish three different tendencies in the uses and adaptations of esoteric hermeneutics in the post-Enlightenment period. First, there is the *continuation* of hermeneutical strategies more or less in the same vein as in earlier contexts; this would include the continuation of correspondence thinking, the postulation of analogical connections, and the uncovering of esoteric layers of meaning from textual sources by the use of techniques such as *gematria*, *temurah*, and *notarikon*. The second trend is the one exemplified by Swedenborg: the use of a *hermeneutical* discourse to avoid the problems of a *factual* and *explanatory* discourse. While Swedenborg’s own attempt was based on a sophisticated philosophical position, developed already before his “visionary period”, other examples can be seen as rhetorical evasions, often developed after an “explanatory” attempt has failed. Examples could include certain tendencies in modern astrology, including the adoption of Jung’s concept of “synchronicity” as a non-causal connecting principle, and, for that matter, the “hermeneutical” turn in psychical research and parapsychology that we discussed in a previous chapter. The third and final tendency for esoteric hermeneutical strategies in the post-Enlightenment period goes in quite the opposite direction: this is the attempt to reform traditional hermeneutical strategies in ways that make them more precise, making them into critical tools for checking the veracity or authenticity of esoteric claims. While esoteric hermeneutical techniques have traditionally been designed to open up and *expand* the possibilities of interpretation, this approach develops techniques that *limit* such possibilities in the interest of precise knowledge. This latter strategy could be considered a *rationalisation* of esoteric hermeneutics, and I will argue that it brings the hermeneutical aspect of esoteric epistemologies into contact with the general tendency towards naturalisation that I have suggested above.

4 Conclusion: Esoteric Knowledge between Naturalisation and Disenchantment

I have argued that esoteric spokespersons have typically answered the problem of disenchantment by *rejecting* the call for an "intellectual sacrifice" in order to obtain knowledge of metaphysics, morals, and values. The assumption that "higher knowledge" can be achieved by human beings in this life, whether through exalted gnosis or expansions of reason that defy the limitations imposed on it by Enlightenment authorities, has remained central to esoteric discourse. There is a genuine epistemological conflict here: according to the modern esotericist, Enlightenment philosophers had simply failed to recognise that interaction between this world and the higher planes was still possible. They would refer to hidden sense organs in the subtle bodies, the reality of extrasensory perception, or the possibility of manipulating the brain to create special "states" in which exalted knowledge could be achieved. Kantian "disenchanted" epistemology had simply presented a too limited picture of humanity's capacity for knowledge, by starting from erroneous suppositions about our sensory organs, the nature and constitution of the human mind, and ultimately the relation of the mind to the cosmos at large. While esoteric spokespersons generally postulated rather exotic ways of attaining higher knowledge, one should be careful to note that other positions challenging the Kantian limitations on knowledge were being explored in intellectual contexts such as German idealism and even in quarters of Victorian naturalism.[73] For example, the "philosophy of the unconscious" became a central dimension of such positions, mediating between epistemological concerns in German *Naturphilosophie*, psychological research, and the practices of occultists and spiritualists.[74]

Once it has been asserted that higher knowledge is possible, and no intellectual sacrifice necessary, many options are still available for explaining why this is so and how knowledge can be achieved. Worldviews may differ, as may the details of each esoteric epistemology. I have argued that the most significant trend in post-

[73] For some of these contexts, see e.g. Frederick Beiser, *German Idealism*; Terry Pinkard, *German Philosophy 1760–1860*; Glenn A. Magee, *Hegel and the Hermetic Tradition*; F. M. Turner, *Between Science and Religion*; Bernard Lightman, *The Origins of Agnosticism*.

[74] See especially Eduard von Hartmann, *Philosophy of the Unconscious* (German original: *Philosophie des Unbewussten* [1869]). Cf. Henri Ellenberger, *The Discovery of the Unconscious*; Adam Crabtree, *From Mesmer to Freud*; Alan Gauld, *A History of Hypnosis*.

Enlightenment esotericism has been to base the rejection of disenchantment on essentially naturalistic grounds. It may be useful to recall the discussion of the relations between naturalism and disenchantment in chapter two. There I suggested that we describe "naturalism" as a continuum of positions ranging from a strict "ontological naturalism", via various intermediate positions that are mildly "supernaturalistic" but remain consistent with varieties of *epistemological* or *methodological* naturalism, before ending up with the "objectionable form" of supernaturalism that contradicts both ontological and epistemological naturalism.[75] From this arrangement, we saw that it is possible to reject disenchantment while remaining within the naturalistic spectrum. Vice versa, positions that are in principle acceptable from the disenchanted perspective are not tolerated from the perspective of naturalism. The disagreement concerns the intellectual sacrifice: while such a "leap of faith" is the only way to retain "religion" in a presumably disenchanted world, it also means that one will have abandoned the naturalistic project altogether.

In previous chapters I have referred to positions that refuse the intellectual sacrifice but remain within the naturalistic spectrum as "open-ended naturalisms". Open-ended naturalism does not deny the possible existence of beings and worlds other than the "natural" ones, but insists that the only way in which solid knowledge can be established about such realities is by focusing on their *interaction with* the natural world, drawing conclusions from such interaction by the critical use of reason and evidence. When I speak of the "naturalisation of esotericism", I mean the attempt (whether successful or not) to legitimise esoteric claims to knowledge in the context of such an open-ended, epistemological naturalism. The precise disciplines and methods referred to in each case may vary greatly – from psychology, to physics, to literary criticism – but the basic naturalistic assumption about how to build knowledge remains.

While naturalised esotericism refuses the intellectual sacrifice demanded by disenchantment, it typically *accepts* disenchantment's epistemological optimism and multiplies it a hundredfold. Not only can humanity gain perfect knowledge of *this* world, but the exact dimensions of heaven and hell are also open for inspection. There is no gap that must be bridged "from the other side", for humanity already possesses the tools to pierce the veil of this world and uncover arcane secrets. To the extent that these

[75] Cf. figure 4 in chapter two.

secrets can also be communicated to the uninitiated, and even be independently verified by others, such knowledge claims appear as extensions of "reason". Understanding the naturalistic aspect of occultism may thus provide an important correction to perspectives focusing on claims to gnosis, and help us understand the place of "higher knowledge" in modern esotericism generally. In the final two chapters I will follow this track by analysing some of the most significant esoteric authors of the early 20th century. These display different uses of "science" and different ways to answer the problem of disenchantment. Emphasising the attainment of higher knowledge and making abundant references to "science" these spokespersons exemplify the diversity of modern esoteric knowledge practices.

11

The Problems of a Gnostic Science
The Case of Theosophy's Occult Chemistry[1]

> The Relativist draws down the *Veil of Isis*, and says: this knowledge is for ever hidden from us. The Teachers in the Eastern Schools reverently lift the veil, and say: the solution of even these most inner mysteries, by searching, thou shalt find.
>
> G. E. Sutcliffe, *Studies in Occult Chemistry and Physics* (1923), xv.

INTRODUCTION: THE PROBLEMS OF A "GNOSTIC" SCIENCE

Founded in 1875, in the middle of the so-called conflict between science and religion,[2] the Theosophical Society has always exhibited an ambivalent attitude towards science and academic research. Helena Petrovna Blavatsky (1831–1891) and the early Theosophists claimed to seek a critical reconciliation between religion and science, guided by a quest for esoteric "higher truth". The Theosophists' goal was, in a sense, a "gnostic" one: the aim was to transcend the limits of reason and faith, and gaze through the veil of Isis to recover hidden, higher truths.[3] As we shall see in the present chapter, this quest made contemporary natural sciences into ambiguous "Others" for Theosophy. The "ascended master" Koot Hoomi succinctly stated the problem in one of the "Mahatma Letters" received by the Theosophist Allan Octavian Hume in 1882: 'Modern science is our best ally. Yet it is generally that same science which is made the enemy to

[1] Parts of the present chapter are based on an article published as Asprem, 'Theosophical Attitudes toward Science', while other parts are based on a paper given at the 3rd international conference of the European Society for the Study of Western Esotericism in Szeged, Hungary, in July 2011.

[2] Cf. F. M. Turner, 'The Victorian Conflict between Science and Religion'.

[3] I am, of course, referring here to the notion of "gnosis" as discussed at length in the previous chapter, and intend no connection whatsoever to the many sects of late antiquity which has commonly – and problematically – been referred to by the term "gnostic". For the problematics of the "Gnosticism" category in this latter historical sense, see especially Michael Allen Williams, *Rethinking "Gnosticism"*.

break our heads with'.[4] Since Theosophy claimed to possess eternal truths, shadows of its doctrine ought to be reflected somewhere in the rapidly growing knowledge base of the sciences. Its principles should be strengthened by scientific inquiry. Why, then, the hostility of some contemporary scientists? How to account for the lack of agreement with "materialist science"? The answer was clear enough: natural science is a cumulative and fallible enterprise, and contemporary science remained incomplete. It could be used to "break the heads" of Theosophists only because it still suffered from inaccuracies and false assumptions.[5] Any apparent disagreements between perennial "higher truth" and scientific knowledge could be dismissed as gaps and imperfections in science's present worldview. As science progressed further, however, it was destined to corroborate the deeper truths already revealed by Theosophy.

The Theosophical attitude to science rested on a response to the problem of disenchantment that did not allow for a clear separation between the natural world and higher realms. Possessing higher knowledge was thought to give the necessary authority to pass verdict on the correctness of scientific claims about nature. Scientific knowledge about the world could, *vice versa*, be used to corroborate higher truths – not as mere analogy or Swedenborgian correspondence, but as providing pieces of fact and evidence that were important elements in the greater structure of esoteric knowledge. In short, higher knowledge has empirical consequences, and the expectation was that empirical data will support exalted cosmological visions. This aspect is impossible to miss if one reads Blavatsky's major works, *Isis Unveiled* (1877) and *The Secret Doctrine* (1888). In *The Secret Doctrine*, for example, much time is spent on the notion of spiritual evolution – not, it has to be noted, as *analogical* to biological evolution, but as a fully integrated and essential part of the material development of organisms. With a basis in esoteric knowledge claims Blavatsky not only felt that she was in a position to dismiss Haeckel's version of Darwinism, but also to make a number of claims about such things as the geological development of planet earth, the origin of different biological "races", and the rise and fall of civilisations – including those of the "lost continents" of Atlantis

[4] Koot Hoomi to A. O. Hume, 'Letter No. 11' (30 June 1882), in A. Trevor Barker (ed.), *The Mahatma Letters to A.P. Sinnett* , 63.

[5] The incompleteness of science is a common theme in Theosophical discourse, and it is made explicit in the same letter quoted from above. E.g., ibid., 60-63.

and Lemuria.[6]

There are, however, certain dangers associated with ignoring the "two worlds" divide of disenchantment in favour of an open-ended naturalism. While it offers the possibility of confirmation and empirical support, it also makes one's claims vulnerable to disconfirmation and falsification. Moreover, there is an inherent tension between any self-professed "perennial wisdom" and the perennially *contingent* and fluctuating knowledge produced by the sciences. Blavatsky could, for example, criticise professional geologists of the 1880s for leaving gaps in the chronology of geological development, and proceed to *fill* these gaps with her "revealed" higher knowledge of lost continents. A few decades later, however, the theory of plate tectonics was proposed, and the gaps Blavatsky claimed to have filled were covered by less esoteric hypotheses. Eventually, continental drift theory would render sunken continents a theoretical impossibility.[7] Dealing with scientific change is, in short, a considerable challenge for anyone claiming knowledge about science from a transcendent source. What to do if science does *not* "catch up" as it progresses after all, but instead drifts further away from perennial truths?

The Theosophical Society's strategies towards modern science changed in important respects in the generation following Blavatsky's death in 1891, but the two above-mentioned problems – the threat of falsification, and the problem with scientific change – did not go away. The most ambitious attempt to align occultism with science in the Theosophical current was in fact still to be launched, in the programme of "occult chemistry". This Theosophical research programme was initiated by Annie Besant and Charles Webster Leadbeater in the mid-1890s. Continuing through the early decades of the 20th century, it ran parallel to the rapid developments in chemistry and physics. Occult chemistry aimed to contribute to those fields of science by using clairvoyant faculties to "scry" the chemical elements, revealing physical structures and properties that were hidden from view for ordinary science. The occult chemists offered their discoveries both as *corroborations* and as *challenges* to "mundane" chemistry, the point being to demonstrate that esoteric ways of gaining knowledge were superior to

[6] For the criticism of Haeckel's version of Darwinism, see Blavatsky, *Secret Doctrine*, Volume 2, 197-199; for geological claims about Atlantis and Lemuria, see passim, but especially 1-12. The whole volume concerns "anthropogenesis", and is full of references to the aspects mentioned above.

[7] E.g. Alfred Wegener, *Die Entstehung der Kontinente und Ozeane* (first edition 1919).

ordinary scientific methods. Occultism was thought capable of beating science at its own game. In contrast to the oracular and revelatory style of Blavatsky's early Theosophy, the second-generation occultists focused on *method*. The aim was no longer to propose a convergence simply of doctrine and worldview, but a convergence of *methodology* as well.

Challenging physical science on the level of methodology, however, meant that the inherent epistemic tensions noted above were increased. If methods for obtaining scientific results in a specific field are claimed to be better than the methods of the physical sciences themselves, then the data produced for the fields in question must be held to even higher standards. Through a close analysis of the specific representations of the atomic world produced by occult chemistry, we shall see that the "higher visions" were remarkably consistent with the basic assumptions of late-Victorian ether physics and the chemistry of yesteryear. While physicists and chemists were reinventing the atom to conform with new experiments in radioactivity and the emerging quantum model, the occult chemists produced visions of ether vortices in the style that Kelvin had postulated half a century earlier. Theosophy claimed to possess the wisdom of all ages, but it represented the science of 1884.[8]

The methodological contribution of occult chemistry was nevertheless motivated by a serious, if misguided, engagement with a major epistemological challenge of modern science. There was in this period an emerging epistemological gap between the representation of unobservable entities and the desire for a position of scientific *realism* about entities such as atoms and electrons. Indeed, a debate between realists and anti-realists was increasingly recognised at the beginning of the 20th century. We already encountered this debate in the context of the philosophy of quantum mechanics in chapter four; it would become the basis of philosophical debates of unprecedented importance throughout that century. The epistemological gap between representations and the entities represented on the atomic and sub-atomic scale was, for example, a basis for Ernst Mach's phenomenalism, advocating a radical stance of anti-realism about

[8] As the chemist J. Michael McBride has shown, the atomic weight numbers that the occult chemists were operating with, even as late as 1909, appear to have been culled for the most part from Lothar Meyer's 1884 chemistry textbook, *Die Modernen Theorien der Chemie*. See McBride, 'Serious Scientific Lessons from Direct Observation of Atoms through Clairvoyance', unpaginated. The details will be reviewed later in this chapter.

unobservables.[9] Together with other philosophies that were sceptical of the promise of "metaphysics", most notably that of Ludwig Wittgenstein's early phase, Mach's anti-realism would inspire the Vienna circle's epistemology of logical positivism.[10] This line of epistemological thinking was, in turn, central to the development of quantum mechanics in the 1920s, and particularly the Copenhagen interpretation associated with Bohr, Heisenberg, Pauli, Jordan, and others. Occult chemistry offered an unusual answer to the epistemological problem of representation in chemistry and microphysics: it promised a method of direct perception, a vision beyond ordinary sight.

I argue that we can best understand Theosophy's occult chemistry if we place it in the context of representational practices in the physical sciences of the period.[11] Moreover, by taking its claim to offer *direct* representations of atomic realities seriously, recognising that this was indeed what occult chemists such as Besant and Leadbeater claimed to be doing, we stand in a better position to analyse its relation to academic chemistry and physics. A critical analysis of occult chemistry as representational practice forms the centre-piece of the present chapter. As we shall see, this focus also provides us with more detailed insights into the problem modern esoteric discourse has with scientific *change* once a "disenchanted" policy of separation is disregarded. I will end this chapter with a short evaluation of Theosophy's struggle with that problem more generally, in particular through its difficulties with incorporating the major revolutions in physics. We must, however, begin with a brief discussion of Theosophical attitudes to science in the first generation.

1 Science and Higher Knowledge in First-Generation Theosophy

Attitudes to science in the Theosophical first generation were framed by the fight for cultural authority in the middle of the religion-science debates set off by Victorian scientific naturalism, and the parallel "occult revival". The quarrels between occultists, spiritualists, psychical researchers, and naturalist hardliners over "supernormal phenomena" are particularly illustrative of this context. Theosophical attitudes to science should thus be seen together with the agnosticism controversy and the debate

[9] For an overview, see e.g. Chalmers, *What Is This Thing Called Science*, 226-246.

[10] See e.g. Martin Puchner, 'Doing Logic with a Hammer'.

[11] A similar point was made by Mark Morrisson, *Modern Alchemy*, 65-96.

about the reach of naturalism that we have discussed in previous chapters.[12] This context helps us explain the presence of two seemingly opposing tendencies in early Theosophy's science rhetoric: on the one hand, a harsh polemic is employed against "materialistic" and "reductionist" science; on the other, spokespersons are at pains to imitate the outer appearance of "the scientific".[13] These two tendencies are part of a single strategy to maintain both similarity and difference with the cultural system of science, trading on its authority while contesting its worldview implications. This, we have seen, was a pursuit shared by many academics of the late 1800s as well, including a number of self-described naturalists.[14]

The first major work of modern Theosophy, Blavatsky's *Isis Unveiled* (1877), offers particularly apt examples of the ambiguous attitude taken towards the natural sciences. As is well known, the content of this book (as that of Blavatsky's *Secret Doctrine*) was largely plagiarised from various 19th century sources, and is thus entirely based on critical stances towards religion and science that were already at hand.[15] As it appears under Blavatsky's author/editorship, the book is divided into two volumes, one dealing with a critical appraisal of science, the other with religion. The first chapter of volume one spells out the perennialist notion that everything that the sciences are now uncovering has already been known for millennia by the ancient esoteric teachings of Egyptian religion, Jewish kabbalah, and the Indian Vedas.[16] Modern science and perennial wisdom traditions are portrayed as talking about the same things, although science is seen as a "shallower" version of the latter, merely scratching the surface of higher truths. Chapter two of the same work looks at the apparent anomalies of modern science, especially as claimed by spiritualists, mesmerists, and psychical researchers. The many claims of "supernormal" phenomena are taken to indicate that the human mind possesses immense latent powers, and are used by Blavatsky to expose the

[12] See my discussion in chapter seven.

[13] For a detailed discussion of "appeal to science" as discursive strategy in Theosophy, see Olav Hammer, *Claiming Knowledge*, 218-22.

[14] Turner, *Between Science and Religion*.

[15] Blavatsky's plagiarism has been known since 1893. See William Emmette Coleman, 'The Sources of Madame Blavatsky's Writings'. The Society for Psychical Research played an important role in making this knowledge available, by publishing Coleman's exposé as an appendix to the English translation of the critical biography of Blavatsky, Vsevolod Sergyeevich Solovyoff, *A Modern Priestess of Isis* (1895).

[16] Blavatsky, *Isis Unveiled*, volume 1, 1-38.

'[p]rejudice and bigotry of men of science' who fail to recognize their existence.[17] This track continues straight into the third chapter, which deals extensively with the English scientific naturalists and the French positivists, all of whom are dismissed as 'the blind leaders of the blind'.[18] The three opening chapters of *Isis Unveiled* set the tone for the rest of the volume, where Blavatsky goes into specific scientific and occult subjects, with the aim of bringing the two together under the purview of an "occult science". One particularly noticeable strategy for doing so is the synonymization of various "occult forces" with phenomena understood in terms of contemporary ether physics.[19] For example, Blavatsky posited that Eliphas Lévi's "Astral Light" was in fact *synonymous* with the luminiferous ether, and that the whole panoply of "psychic" and "magical" forces were thus mediated in *exactly* the same way as better-known phenomena such as electricity, magnetism, and optical light. Blavatsky could thus cite authorities such as Faraday, Edison, Graham Bell, William Crookes, and even John Tyndall, as experts on other "etheric" phenomena and technologies, from magnetism and electricity, to telegraphy and telephony, likening these to what was going on in psychic and occult science. *Isis Unveiled* was thus an important early contribution to the field of speculation that I have previously called "ether metaphysics".[20]

Proceeding to the life sciences, another central example of Blavatsky's ambiguous attitude to science is the role of evolution in her *Secret Doctrine*. As Olav Hammer has noted, the lemma "evolution" in the index of *The Secret Doctrine* shows the term to be one of the most frequent ones in the entire work.[21] There is, however, a marked ambivalence in the usage of the term: while evolutionary theory was a heated issue for theists defending their faith, the arguably *panentheistic* worldview on which Blavatsky built her Theosophical doctrines was more than happy to take the basic framework of evolution on board, and integrate it in explanations of how spirit and matter interact in the natural world and beyond. The problem, however, was one of interpretation. The Darwinian concept of natural selection as a completely mechanistic, non-teleological principle accounting for biological diversity and evolutionary change

[17] Ibid., 40.

[18] Ibid., 74-99.

[19] Ibid., 126-162.

[20] Cf. my discussion in chapter six.

[21] Hammer, *Claiming Knowledge*, 257.

was obviously quite useless from a Theosophical perspective.[22] In Blavatsky's doctrines, evolution is embedded in a much grander cosmological framework, built on a system of divine emanations following cyclical progressive patterns. Where Darwinian evolutionary theory eschews the need for any external force directing the evolution of species, the Theosophical theory presupposes a grand plan leading to an ultimate goal – a kind of "providential evolution".[23] Blavatsky's providential evolutionism may have been indirectly influenced by German idealism through one of her most frequently plagiarised sources: the English translation of Joseph Ennemoser's *Geschichte der Magie* (1844).[24] Ennemoser (1787–1854) was a Tyrolean physician immersed in German Romanticism, idealism, and Mesmerism, and his historical work contributed greatly to the creation of a narrative where "magic" was understood in terms of Mesmerism.[25] Ennemoser's view of magic also rested on a narrative that, in Hanegraaff's words, tells 'how, with many twists and turns, the inborn potential of human consciousness slowly but certainly comes to full realization, according to God's providential design'.[26] Romantic evolutionistic thinking clearly prefigures that of later occultist authors, including that of Blavatsky, who wrote in the context of new forms of scientific evolutionism. Clinging to a form of esoteric and romantic providentialism, *The Secret Doctrine* thus contains polemical passages dealing with the views of the most well-known spokesmen for mechanistic evolutionary theories, including Darwin, T. H. Huxley, A. R. Wallace and Haeckel.[27]

Challenging the conceptual structure of Darwinism, the typical response was to judge these modern theories not as entirely wrong, but as incomplete. While evolution might seem to modern biologists as a purely mechanical and unguided process, Blavatsky held the real problem to be that

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[22] Cf. my discussion of evolutionistic theories in chapter five.

[23] For this concept and its background in Anglican natural theology, see Gregory P. Elder, *Chronic Vigour*.

[24] Coleman, 'The Sources of Madame Blavatsky's Writings', 356. The English translation by William Howitt was published in 1854 as *The History of Magic* (two volumes), and popularized Ennemoser's influential narrative in the English-speaking world. For Ennermoser's general influence on Blavatsky, see Karl Baier, *Meditation und Moderne*, vol. 1, 258-261.

[25] For an overview, see Hanegraaff, *Esotericism and the Academy*, 266-273.

[26] Ibid., 268.

[27] E.g. Blavatsky, *Secret Doctrine*, volume 2, 197-199, 681-692, and *passim*. Cf. Hammer, *Claiming Knowledge*, 257-9.

> the differentiating "causes" known to Modern Science only come into operation after the *physicalization of the primeval animal root-types out of the astral*. Darwinism only meets Evolution at its midway point – that is to say, when astral evolution has given place to the play of the ordinary physical forces with which our present senses acquaint us.[28]

Materialistic mechanism only explains a tiny part of the whole picture. To be complete, it must be supported by a kind of esoteric vitalism, having its seat in the suprasensible realms of the etheric and astral planes. These planes are, however, not really separated from the physical world: to the contrary, Blavatsky's argument is that, in order to understand form-production in material organisms, one must start by acknowledging the active vital forces present on the astral plane, which *give rise to* the purely material processes that modern biologists recognise. The subtler realities are causally active in the physical world and must be understood to make science complete. Again, Theosophical gnosis is cast as a corrective to scientific reason.

* * *

The cultural impact of the professional sciences in the last quarter of the 19th century was largely framed by the polemical conflict with religion and theology. The period was, however, also marked by a range of empirical and technological breakthroughs, particularly in the field of Maxwellian electrodynamics, which opened the borders of physical science to novel alliances. The discovery of cathode rays in the 1860s and 70s, x-rays in 1895, radioactivity in 1896, the discovery of radio waves in the late 1880s and the successful transmission of radio signals by Nikola Tesla in 1891 and Oliver Lodge in 1894 – all of these events seemed to widen the range of possibilities for science and technology in dramatic and unpredictable ways. But in addition to suggesting new directions for physics, these startling new phenomena inspired many scientifically oriented occultists and spiritualists.[29]

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[28] Blavatsky, *Secret Doctrine*, volume 2, 685. Cf. Hammer, *Claiming Knowledge*, 258.

[29] Cf. chapter four on the developments in physics and chemistry, and chapters seven to nine for the relevance to psychical research. On this topic, see also Richard Noakes, 'The "World of the Infinitely Little"'.

These developments coincided historically with the death of Blavatsky in 1891, and the rise of a new generation of Theosophists who sought to renew the Society's doctrines and strategies. After the schisms that ensued in the mid-1890s between the original Adyar society, led by Henry Steel Olcott until his death in 1907, and the American faction headed by William Q. Judge, Annie Besant emerged as a key figure in the development of Theosophical doctrine. Besant would eventually succeed Olcott as president of the society; in the meantime, she served as chief editor of the Theosophical journal *Lucifer*, with G.R.S. Mead as co-editor from 1895.

From this influential position Besant assumed centre stage in what is sometimes termed the "Neo-Theosophy" of the Adyar society.[30] As editor of *Lucifer* she started a publication campaign that updated the strategic alignment of Theosophy with modern science. Through her column 'On the Watch-Tower' Besant discussed recent events and debates, including discoveries and advances in the world of science, usually cast as confirmations of Theosophical doctrine. The journal, which was renamed *The Theosophical Review* in 1897, featured articles with titles such as 'Theosophy, the Religion of Science', and 'Confirmations of Theosophy by Science'.[31] Also during the 1890s, Besant teamed up with the self-professed clairvoyant Charles W. Leadbeater, whom she had first met in London in 1894, and embarked upon the curious Theosophical research project of occult chemistry: the attempt to investigate the structure of molecules, atoms, and ether by way of clairvoyant perception.[32]

Occult chemistry was the most extraordinary and influential outcome of the new generation's involvement with physical science. The program was initiated in the same year as Wilhelm Röntgen accidentally discovered x-rays, and it was aimed at shifting Theosophy's alignment with science by contributing to the *experimental* and *methodological* aspects of physics and chemistry instead of purely doctrinal, theoretical, and factual aspects.[33] This ambitious and innovative move would have a considerable influence on Theosophy's later discourse on science, but it was also a perilous path as

[30] For standard biographies of Besant, see Arthur H. Nethercot, *The First Five Lives of Annie Besant*; idem, *The Last Four Lives of Annie Besant*; cf. the more recent account by Ann Taylor, *Annie Besant*.

[31] Cf. Morrisson, *Modern Alchemy*, 72.

[32] Besant, 'Occult Chemistry'; cf. Morrisson, *Modern Alchemy*, 65-96. For a biography of Leadbeater, see Gregory Tillett, *The Elder Brother*.

[33] Morrisson, *Modern Alchemy*, 67; cf. Luckhurst, *Invention of Telepathy*, 75-91.

far as cultural credibility and legitimacy is concerned. While the aim was no doubt to build a closer relationship with scientific practice, it also brought the inherent conflicts between esoteric claims to higher knowledge and fallible scientific claims into the open.[34]

2 Visions beyond Sight: Occult Chemistry and the Problem of Representation

> Of late years there has been much discussion among scientific men as to the genesis of the chemical elements, and as to the existence and constitution of the ether. The apparatus which forms the only instrument of research of the scientists cannot even reach the confines of the ether, and they apparently never dream of the possibility of examining their chemical atom. There is in regard to both atom and ether a wealth of speculation but a poverty of observation – for lack, of course, of any means which would render observation possible.[35]

This is Annie Besant's opening statement in the first report on occult chemistry, published in *Lucifer* in 1895. It was a perfectly fair assessment of the situation in physics and chemistry at the time. The 'poverty of observation' that Besant refers to stems from

[34] It should be noted that my interpretation of occult chemistry and Theosophical science goes in quite an opposite direction from the narrative recently drawn up by Nicholas Goodrick-Clarke in *The Western Esoteric Traditions* (2008). Goodrick-Clarke, who was a noted expert in the field of esotericism and moreover a specialist of Theosophy, ended his book with a chapter on 'Modern Esotericism and New Paradigms' that deals almost exclusively with esotericism and science – in a rather broad understanding of both those terms. Very curiously indeed, Goodrick-Clarke's narrative, which also discusses occult chemistry and more recent attempts to revive it, reads like a strangely Whiggish account of how esoteric knowledge is being "demonstrated" and "confirmed" by scientific "proof". All of those terms are rather strongly abused in the chapter, whether we read about occult chemistry's 'confirmation of superstring theories' (239), clairvoyants' independent confirmation of auras (241), or the 'empirical proof' of homeopathy (242). One is struck by the systematic omission of all critical literature – as an example, the chapter on Theosophy fails to even mention or reference the SPR's work on how Blavatsky forged the Mahatma letters or Coleman's proper demonstration that *Isis Unveiled* was a largely plagiarised work – and one is left with the impression that it is all designed to support the scientific validity of these "esoteric" practices. As I think my discussion of the sources in the present chapter sufficiently demonstrates, such a narrative is unwarranted and highly misleading.

[35] Besant, 'Occult Chemistry', 211.

the fact that the entities postulated by physical science were becoming too small to be seen, even with the best available microscopes. Their observation and demonstration was increasingly dependent on elaborate forms of *instrumentation* and theoretical inferences. This was by no means a new problem. In the canonical tales of the history of science, it was this problem that led certain natural philosophers to distrust the witness of Galileo's telescopes – perhaps even with good reason, given the philosophical context and knowledge of the optics of telescopes at the time.[36]

If the "artificial" use of optical devices such as telescopes has historically been enough to cause concern about the reality of the phenomenon observed by their aid, there is little wonder that notions of an invisible ether that can only be inferred indirectly, or of subatomic particles too small to be seen should also be the objects of controversy. The ether was inferred on the basis of theoretical deduction rather than on empirical induction; to paraphrase Oliver Lodge, its existence was revealed by the power of reason alone.[37] When several attempts at observing the ether indirectly, through a search for even the slightest measurable effects of its presence, had failed, there appeared to be a lack of proportion between the *realism* invested in the concept of ether, represented and visualised in numerous concrete images, and the lack of directly observable evidence of its existence. When Rutherford and Soddy split the atom at the start of the new century, and new subatomic entities increased in number as they decreased in size, the problem of representation was only becoming more acute.[38] Science was confronted by a very real epistemological challenge, which may be described as a crisis of representation.[39] Occult chemistry is a symptom of this crisis. Before we continue to look at the Theosophists' engagement with the crisis of representation, however, we should look briefly at what is meant by "representation" in this context, relating it to the functions of *visualisation* and image-use in scientific practice.

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[36] On this theme, see Paul Feyerabend, *Against Method*, 81-102.

[37] Lodge, *Ether and Reality*, 166.

[38] See Peter Galison, *Image and Logic*. For the proliferation of entities in later particle physics, see Andrew Pickering, *Constructing Quarks*.

[39] This element ties in with the lack of visualisability, or *Anschaulichkeit*, that Paul Forman noted in the case of the inventors of quantum mechanics in Germany. See Forman, '*Kausalität*, *Anschaulichkeit*, and *Individualität*'.

Images and visualisation play a major role in the production, presentation, and dissemination of scientific knowledge. Typically, the scientific use of images has been connected with a question of *representing* nature: drawings of plants and animals are thought to represent species in botany and zoology, topographical maps correspond to features in the terrain, and series of elliptic models of planets are expected to represent the structure of the solar system.[40] Describing scientific imagery *merely* in terms of representation, however, results in an impoverished and rather naïve understanding of their functions.[41] Images perform many other functions as well, depending on the context they are used in and the audience they address.[42] There is a difference between a model used in a peer-reviewed academic article, for example, and those used in popularizing books, or drawn on blackboards in high schools and undergraduate courses. Scientific images communicate, and serve different purposes relative to the target audiences; they may argue, persuade, or seduce.

On this basis we may distinguish between the *semantic* and *pragmatic* dimensions of image use in scientific practice. Questions about whether a certain model, figure, or image faithfully *represents* an external object, a physical effect, or a theoretical concept properly belong to *semantics*, while the *pragmatic* dimension concerns the effects that an image has on the receiving public, whether this is to communicate an idea to scientific peers, bolster an argument, or to provide heuristics that are easy to grasp for the non-specialist. In their capacity as pragmatic expressions, scientific images are comparable to non-representational, performative speech-acts.[43]

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[40] In this sense, representation is obviously connected to the so-called correspondence theory of truth, which has been dominant in western science and philosophy. See e.g. the classic criticism in Richard Rorty, *Philosophy and the Mirror of Nature*.

[41] It also obscures the historically contingent processes by which certain forms of representations have been constituted as being able to give "objective" testimony in the first place. On this theme, see especially Peter Galison and Lorraine Daston, *Objectivity*.

[42] For an instructive overview, see the essays compiled in Luc Pauwels (ed.), *Visual Cultures of Science*. For contemporary reflections drawing on other disciplines such as art and photography, see James Elkins, *Six Stories from the End of Representation*.

[43] In the sense of John L. Austin and John Searle. E.g. Austin, *How to Do Things with Words*; Searle, *Speech Acts*.

If we decide to look solely at the semantic dimension of representation, we are also forced to distinguish between different types of referents.[44] Some scientific representations are meant to refer to "objects" and "entities", but this is certainly not the only type of referent that we find in scientific imagery.[45] Images may also refer to explanatory *models* that are of a purely conceptual character rather than directly picturing something in empirical reality. They can refer to hypothetical entities that may or may not exist, or even to simulations of mutually exclusive scenarios. Scientific images may present mental pictures aiding practices of *discovery*, or they may bolster the *justification* of a particular entity in light of broader models and conceptual schemes.

* * *

Representational practices in the sciences change with the formation of new disciplines and new fields of inquiry, but also with the emergence of new frameworks for understanding old ones. In the physical sciences, for example, representations have become increasingly preoccupied with *invisible* and *non-visual* referents. An early paradigmatic example is Descartes' representation of the magnetic field, which provided a mechanistic model for explaining what had previously been considered an "occult force" (see figure 14 below).[46] By the 19th century, the corpuscular theory that had been at the basis of Descartes' representation had largely been discarded and replaced by theories of ether. From around the 1870s, all the phenomena of optics, electricity and magnetism were being explained and represented by ether models. Thus, the Maxwellian ether physicists G. F. FitzGerald and Oliver Lodge both represented the propagation of an electrical current and the magnetic field surrounding it as the function of mechanical action in the ether (figure 14). The spinning cogwheels in Lodge's model, for example, represent singularities in the ether that create strains and friction by spinning in a vortex motion, giving rise to the phenomena of electricity, magnetism, light, and even to matter itself. This model was connected with Lord Kelvin's popular vortex theory of matter.[47] The ultimate structure of matter, electricity

[44] In the following I borrow from Luc Pauwels, 'A Theoretical Framework for Assessing Visual Representational Practices in Knowledge Building and Science Communications'.

[45] Ibid., 2-4.

[46] Descartes, *Principia philosophiae*, 211.

[47] See Bruce J. Hunt, *The Maxwellians*, 212-216; cf. Asprem, 'Pondering Imponderables', 139-141.

and light are other obvious examples of invisible or non-visual referents for science. A series of new such representations would emerge in the early 1900s: J. J. Thomson's "plum pudding" model of the atom, in which negatively charged "plums" (electrons) were depicted as rotating inside of a positively charged "pudding" (atom), was an early attempt to incorporate the electron into the atomic structure, but it was soon superseded by the planetary models of Ernest Rutherford and Niels Bohr. These developments, which have been discussed at some length in an earlier chapter, show the proliferation of non-visual referents in science at the beginning of the 20th century. Increasingly remote from the ordinary lifeworld of human beings and from the realm of everyday perception, they also bear witness to the growing crisis of representation.

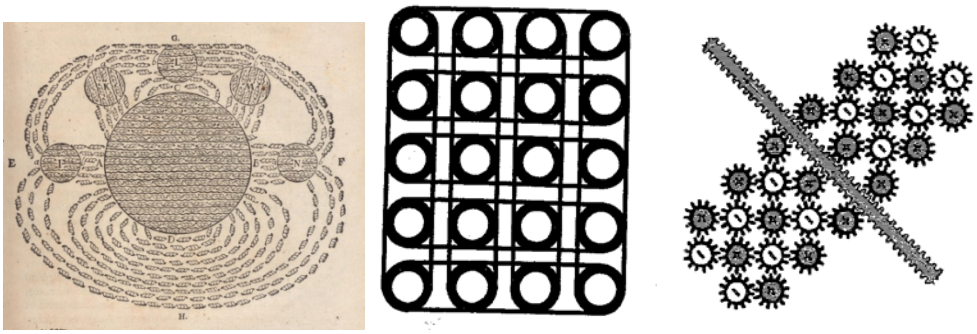


Figure 14: Representations of non-visual entities in physics. *Left*: Descartes' representation of the mechanics of magnetic fields. *Middle*: FitzGerlad's model of elastic strain in the ether. *Right*: Lodge's mechanical ether model, represented as spinning cogwheels.

Promises of a Gnostic Science: The Clairvoyant Perception of Chemical Elements

For some, the increasingly indirect and instrumentalised methods by which scientific representations had to be formed were seen as a serious disadvantage and a source of scepticism concerning the ontological status of scientific entities. This was clearly the opinion that informed Besant's statement quoted above. By launching the programme of occult chemistry, the Theosophical Society set out to exploit this epistemological gap, and to fill it by the use of supernormal perception. In a series of "experiments", starting in 1895 and continuing through the first decade of the 20th century, Besant and the self-proclaimed clairvoyant Charles Webster Leadbeater claimed to psychically perceive, describe, and represent the structure of the chemical elements, in ways that would simply be impossible with ordinary laboratory instruments. The Theosophists' direct

visions were drawn down in meticulous detail, showing various features and compositions of the elements, and were published first on the pages of *Lucifer* at the end of 1895, and later in expanded form in the 1909 volume entitled *Occult Chemistry*. From the first publication on the subject, there was no doubt about the potential importance of these studies for the fate of Theosophy's credibility. As Besant noted, the aim was to 'suppose hypotheses useful as elucidating some scientific problems' that science was only now about to explore. She added, rather ambitiously, that it would 'be well for the Theosophical Society if the first statement of facts that will then be accepted should have come from members of its body'.[48] The ambitious hope was, in other words, that Theosophy might demonstrate its superiority by creating scientific precedence for new discoveries in physics and chemistry. Not only would such discoveries, if achieved and corroborated, constitute extraordinary evidence of psychic powers, which alone would boost the credibility of the Society's theories and practices, but it would also show that Theosophy could make a significant contribution to the development of scientific methodology. It promised to solve the crisis of representation and save scientific realism through occultism.

In what follows, I will take the publications of occult chemistry seriously as what they claim to be: namely, superior representational practices within the domain of physical science, purportedly representing real physical structures and revealing the nature of the very same entities that physics and chemistry were concerned with. On this assumption, I will assess how occult chemistry *actually* relates to the representational practices of the contemporaneous sciences to which it claimed allegiance. In other words, this is a *semantic* comparison of two representational practices that, on the face of it, claim to speak about the same, "real" entities. In closing the comparison, I will also assess some of the *pragmatic* dimensions of occult chemistry's representational practice. First, however, we should have a closer look at the actual procedures and practices involved in occult chemistry.

* * *

The first experiments in occult chemistry took place in the summer of 1895, when Leadbeater had offered to train Besant's psychic abilities. The two were experimenting

[48] Besant, 'Occult Chemistry', 211.

with several lines of clairvoyant explorations that summer, which would result in a number of publications.[49] During a weekend retreat in August 1895, Besant and Leadbeater scried the distant past of Atlantis and Lemuria, and explored far off planets – even claiming to have discovered four hitherto unknown ones. They travelled to the higher *devachanic* plane, and revisited their previous incarnations.[50] Besides these exotic adventures, Leadbeater also introduced Besant to the possibility of clairvoyantly perceiving chemical elements. Having been encouraged to make a try for herself, Besant reported seeing certain geometrical shapes and patterns emerge in her mind. Leadbeater, acting as guru, could immediately ensure Besant that what she had seen was the astral form of the element of carbon.[51]

Unfortunately, we do not learn very much about what kinds of techniques were employed and how, exactly, Leadbeater instructed Besant in their use. A few details can be deduced from descriptions of the more important experiments that followed later that summer. These resulted in the first pilot study of occult chemistry in which the elements of hydrogen, oxygen, and nitrogen were subjected to clairvoyant examination and analysis.[52] The setting of these experiments were extremely informal, in stark contrast to the thoroughly controlled atmosphere of contemporary chemistry laboratories. The clairvoyant "experiments" in fact appears to have taken place quite by chance, on a grassy slope by Finchley Road in north London, in response to a question asked by the Theosophist Alfred Sinnett during an afternoon stroll.[53] Sitting down in the grass, surrounded by dignified bearded men and younger students, Besant and Leadbeater practiced the clairvoyant technique of "magnification". This was described as a "yogic" power focused on making oneself "astrally" small at will, the logic being that tiny object would thus appear correspondingly magnified relative to the observer. Leadbeater later explained this method of observation with reference to the chakra system. The clairvoyant method of observing micro-physical events directly was connected with the *ajna chakra*, a point in the etheric body situated just between the eyebrows:

[49] E.g. Leadbeater, *The Devachanic Plane*.

[50] Nethercot, *The Last Four Lives of Annie Besant*, 49-50.

[51] Ibid.

[52] Besant, 'Occult Chemistry' (Published November 1895).

[53] Nethercot, *The Last Four Lives of Annie Besant*, 51.

> A tiny flexible tube of etheric matter is projected from the centre of [the ajna chakra], resembling a microscopic snake with something like an eye at the end of it. This is the special organ used in that form of clairvoyance, and the eye at the end of it can be expanded or contracted, the effect being to change the power of magnification according to the size of the object which is being examined. This is what is meant in ancient books when mention is made of the capacity to make oneself large or small at will ... .[54]

If this sounded a little too speculative, Besant and Leadbeater could also lean on biological and neurophysiological theories - although these theories were already close to a century old. As can be seen in Leadbeater's little book on *Clairvoyance*, they followed an influential theory developed by German physicians and Mesmerists in the early 19th century, which referred to two separate nervous systems: the cerebro-spinal system (connected to the brain and spine) and the ganglionic system (focused on the thick neuron tissue around the solar plexus).[55] This theory had been an influential physiological explanation of Mesmerism, in particular of the many bizarre phenomena associated with artificial somnambulism.[56] As in those earlier interpretations, Besant connected natural clairvoyant capabilities to the lower ganglionic system. However, for Besant this was not the end of the story. In fact, she claimed that the ganglionic "sympathetic" form of clairvoyance only worked as a spontaneous *reflex*, and was particularly associated with animals, the lower human races, and with human beings of lesser intelligence. However, 'at a later stage of evolution psychic sensitiveness reappears, but it is then developed in connection with the cerebro-spinal centres, and is brought under the control of the will'.[57] The willed power of "magnification" through the use of the *ajna chakra* clearly belonged to this "higher" and "cerebro-spinal" form of clairvoyance, making the faculties of occult chemistry stand out not only from the

[54] Leadbeater, *The Chakras*, 81.

[55] The basic distinction was first made by the physician Johann Christian Reil in 1807 (although he talked about the "cerebral" rather than the "cerebro-spinal" system), and was made a centerpiece of Mesmeric discourse by Carl Alexander Ferdinand Kluge in 1811. See Hanegraaff, *Esotericism and the Academy*, 262-264. On this whole field of speculation, see also Karl Baier, *Meditation und Moderne*, vol. 1, 179-246.

[56] For examples, see e.g. the many anecdotes discussed in Alan Gauld, *A History of Hypnotism*, and Adam Crabtree, *From Mesmer to Freud*. Cf. Henri Ellenberger, *Discovery of the Unconscious*.

[57] Besant quoted in Leadbeater, *Clairvoyance*, 23.

methods of mundane scientists, but from the capricious faculty of less talented and unsophisticated "natural psychics" as well. Here we notice once more the progressive evolutionistic discourse that we saw in Blavatsky's work, also borrowed from the context of German Romantic Mesmerism through the work of Ennemoser. The focus on reason, will, and control is likely also influenced by Eliphas Lévi's emphasis on the use of the higher magical "will" to control the potentially dangerous Mesmeric fluids.[58]

However this may be, the occult chemists claimed to be able to perceive otherwise imperceptibly small pieces of matter by reducing the size of the etheric tentacle eye to the scale of molecules and atoms. They also claimed to be able to capture atoms of oxygen, hydrogen and nitrogen in the surrounding atmosphere, to hold them still, and split them by acts of pure will. This splitting of the atom – obviously imagined before Rutherford and Soddy's famous experiments in Montreal, and in complete ignorance of the theories of radioactive decay[59] – was presented as a method to lay bare the deeper levels of composition of each element. Finally, and possibly in standing with the cerebro-spinal form of clairvoyance, all of this was apparently achieved in a lucidly conscious state; the investigators would not appear to be in any kind of trance or display any other extraordinary behaviour. In fact, the occult chemists on the lawn were able to consciously describe what they were seeing and draw sketches representing their visions.

Complete illustrations and diagrams of the visions were, however, only drawn up later by artists in the Theosophical Society. These drawings pretended to represent the fundamental structure of the elements themselves, and proceeded to picture what each atom looks like when split into its composite parts. The clairvoyant splitting of the atom claimed to reveal the deeper structure of the chemical atom on four subtle "states" of matter: the four "etheric" states referred to as Ether 1, 2, 3, and 4 (see figure 15).[60] On the finest level of Ether 1, all of the chemical elements were revealed to be identical. The occult chemists claimed to have discovered the 'ultimate physical atom', the universal building block of all matter. They quickly identified it with the Sanskrit term *anu*, which

[58] E.g. Lévi, *Transcendental Magic*, 71-79. Note that Lévi, too, was under the influence of Romantic Mesmerism, and was, furthermore, another of Blavatsky's frequently plagiarized authors. Coleman, 'The Sources of Madame Blavatsky's Writings', 357.

[59] E.g. Trenn, *The Self-Splitting Atom*. Cf. my discussion in chapter four.

[60] Besant, 'Occult Chemistry', 212-213.

has typically been translated with the Greek “atom”. The occult chemists proceeded to count the number of such fundamental particles in each element, claiming that these numbers explained the atomic weight of the elements as recognised by contemporary chemistry.

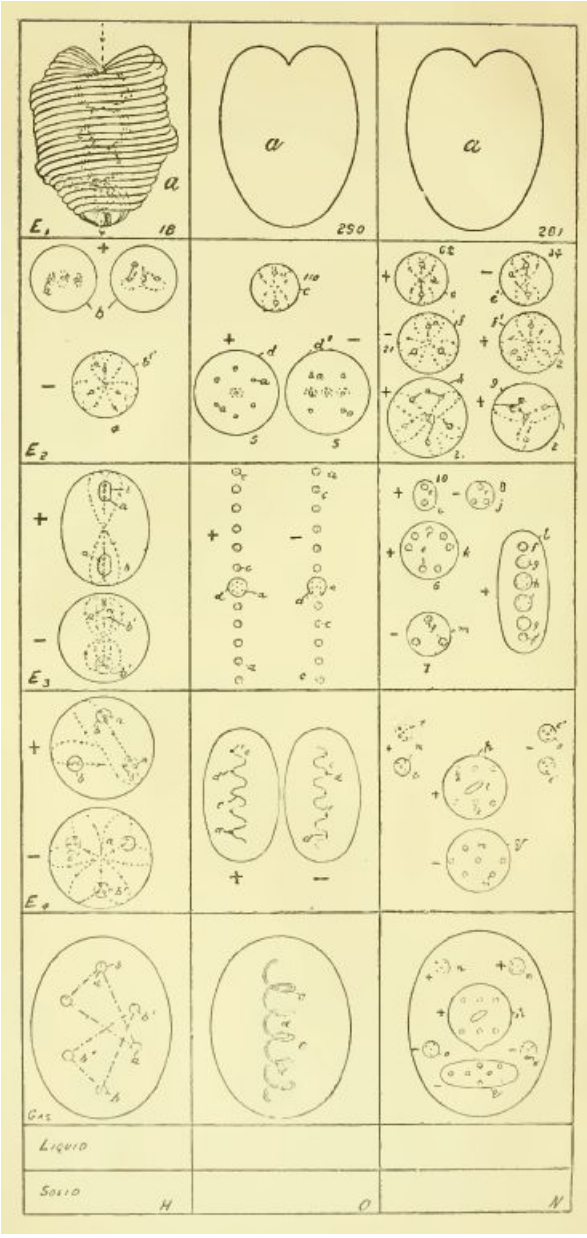


Figure 15: “Occult” representations of hydrogen on five levels of materiality. At the bottom we see an isolated but complete hydrogen atom. Above we see the atom “split” on four successively more “subtle” levels of ether. On the top we see the “ultimate physical atom” itself, considered to be the universal building block of all the elements – comparable to Crooke’s “protoyle”. Reproduced from the 1919 second edition of *Occult Chemistry* (fold-out between pages 6 and 7).

Such was the basic methodology of occult chemistry. After the improvised experiments of 1895, it appears to have been employed again only much later, in 1907, when 59 other elements were observed.[61] William Crookes, himself a celebrated scientist who was now reaching old age, had helped obtaining specimens of several elements, including lithium, chromium, selenium, titanium, vanadium and boron, for use in these experiments.[62] Other elements were observed during a summer holiday in Germany that year, where Leadbeater's young Singhalese protégé Curuppumullage Jinarajadasa (1875–1953) secured samples from a museum in Dresden.[63] Jinarajadasa, who later became president of the Theosophical Society and the editor of the definitive third edition of *Occult Chemistry* (1951), was tasked with compiling the elaborate tables of the structure and weight of the atoms as they were said to have appeared to the occult chemists. He would calculate the number of ultimate physical atoms in each element, and do the important work of establishing correspondence with mainstream chemistry.[64] While Besant and Leadbeater did the "experimental" work, it was Jinarajadasa who did the "theoretical" calculations. This is a significant observation that we will return to shortly.

Reading Representations: From Charity to Suspicion

As I hope to have demonstrated, Besant and Leadbeater offered up their results as being *literally* in line with legitimate science. There is no room for interpreting their representations simply as analogies, parallels, or claims about completely distinct "other dimensions" without distorting their own accounts. The occult chemists expected to engage mainstream scientists with their findings, and even sent their first report out to a number of professional chemists. The only person to respond appears to have been their good friend and fellow Theosophist, William Crookes.[65]

The authors considered the many drawings of chemical atoms and their composite parts to represent real entities, too small to be seen by any other known

[61] Jinarajadasa, 'Introduction to the Third Edition', 2.

[62] Ibid.

[63] Ibid., 3.

[64] Ibid., 3.

[65] Nethercot, *The Last Four Lives*, 52.

method of observation. If, for the sake of argument, we take a charitable approach to the occult chemists' claims, we are led by their own reasoning to compare their representational practice with those of mainstream chemistry. Doing so, however, reveals some important points of *disagreement* between the two practices. To begin with, the occult chemists reveal a much more *realistic* take on representation than most physicists and chemists were ready to commit themselves to. For the professional scientist, representation is more often offered as a heuristic device, a model that conveniently pictures certain physical features which need accounting for. The visual representation of the atomic models of Rutherford and Bohr, for example, follow mathematical and conceptual constrains, based on a systematisation of experimentally produced data; they do not claim to be descriptions of what atoms "really look like".

The development of the periodic table may serve as an instructive example of this semantic difference. The slow development of the periodic table throughout the 19th century was not based on an attempt to *describe* or *depict* the relation between elements as such. Rather it was concerned with accounting for the properties of elements, classifying them and making hypotheses about the mechanisms involved. The Russian chemist who successfully formulated a "periodic law" by which the chemical elements could be arranged, Dmitrii Ivanovich Mendeleev (1834–1907), did so by starting with what is observable and testable, systematising the evidence, and then constructing theories about how different properties may be accounted for and related to one another.[66] Representations of the elements only include what must be inferred in order to systematise and explain the observed behaviour. The occult chemists, quite to the contrary, aimed to create *descriptions*: they estheticize the atomic and sub-atomic world, but add nothing to the explanation of chemical affinities.

What the occult chemists did claim to add, however, was an ability to split the atom and reveal the deeper structure of the elements. But while the number of "ultimate physical atoms" of each element added up in a certain ratio so as to correspond with the atomic weight of the element in question, this did not add anything new in terms of explaining the relation between elements of different atomic weights – it merely repeated what was already known. The clairvoyants claimed to have "predicted" the discovery of new elements, but also the notion of prediction was radically different from

[66] See the details given in Gordin, *A Well-Ordered Thing*, esp. 15-48.

the common scientific understanding of the word. It was not the kind of theoretical predictions created by empty slots in a matrix explaining other known data, as in the case of Mendeleev's periodic table,[67] but again rather a *description* of something that had been observed. The occult chemists' procedure for discovery was similar to the those of amateur naturalists, lacking knowledge of taxonomy, morphology, or evolution, but reporting observations of things seen. Even on the most charitable interpretation, then, taking the "actors' categories" seriously, the representational practice of occult chemistry differs significantly form ordinary chemistry and physics. The occult chemists are strong (or even naïve) scientifics realists: their representations supposedly refer to objects *in themselves*, sometimes described in great detail. Such naïve realism stands in stark contrast to the experimentalism of the early 20th century, which in its strongest form went on to say that there could be no meaningful reference beyond the experimental procedure itself: in the lingo of the logical-positivists, the meaning of a (scientific) statement is its method of verification.[68]

What happens if we apply this empiricist criterion of meaning to the representations of occult chemistry? The "method of verification" in occult chemistry is the use of clairvoyance which, so it is claimed, produces mental images of external objects. This means that even if we were, for the sake of argument, to remain overly charitable, the immediate referent of the representations consists in images in the mind of the experimenter rather than in any intersubjectively available object or inscription. We soon run into a problem of intersubjectivity: not only is the source of the alleged visions already extremely problematic – clairvoyance of fantasy? – but we cannot even know if there is any "vision" at all behind the discursive claims about them. Yet another problem is introduced here since the actual representations, as presented in the publications of occult chemistry, were drawn and formed *not* by the would-be clairvoyants themselves, but by artists in the Theosophical Society who were instructed by the occult chemists afterwards. We are, in other words, many steps removed from the "raw" data.

* * *

[67] As with Mendeleev's periodic law, which famously predicted with great detail the discovery of several new elements from the 1870s onward.

[68] For this verificationist theory of meaning, see e.g. Moritz Schlick, 'Positivismus und Realismus'.

There is an undeniable irony in the account presented so far: by starting with a charitable reading of the authors' intentions we are led quite naturally to a position of deep suspicion. We have tried to faithfully reconstruct the occult chemists' procedure, and taken their claim to make a contribution to scientific methodology seriously by juxtaposing them with actual scientific practice. The result is that the rhetorical overlay of similarity and congruence between Theosophical and mainstream science breaks down and shows us how different the two projects are in their very conceptualisation of "science". Moreover, a detailed focus on the actual practice of occult chemistry revealed internal problems that are not resolved: what is the relation between the "clairvoyant visions" and the second-hand artistic representations of them? The relation between the person making a discovery and the person creating a visual representation is unproblematic in mainstream chemistry or physics, as far as it is concerned with making conceptual *models*. It is much more problematic for the occult chemists who claim to depict how subatomic entities look like. At this point we have reached the limit of what a charitable reading can offer. It is time to adopt an explicitly suspicious approach.

If we leave the actors' self-understanding behind us and instead assume (with the backing of our best scientific knowledge on how the world and the human mind actually work) that clairvoyant perception of subatomic particles is *not* possible, and hence that claims built on clairvoyance must be bogus, the representational practices of occult chemistry must be considered as a very different type of image use. We may of course still consider the possibility that the representations refer, indirectly and second-hand, to mental images visualised by the "clairvoyants" and communicated to the artists. The *belief* that such images, created by techniques of visualisation, are expressions of clairvoyant perceptions may be genuine enough. However, we should not feel obliged to rule out other possibilities, including that the representations are crafted from already existing material, perhaps somewhere in between conscious fraud and unconscious make-believe.[69]

There are good reasons to believe that fabrication was, in fact, an important part of producing the representations of occult chemistry. As has been noted already, plagiarism veiled as exalted insight is nothing new in the history of Theosophy:

[69] This is somewhat similar to an argument advanced by James Justin Sledge concerning the famous scrying sessions of John Dee and Edward Kelley. See Sledge, 'Between Loagaeth and Cosening'.

Blavatsky's work was in its entirety a pastiche created from available scholarly and occult material. We may quote from Coleman's exposé just to give a reminder of the extent of this feature of her work:

> Our author [Blavatsky] made great pretensions to Cabbalistic learning; but every quotation from and every allusion to the Cabbala, in *Isis* and all her later works, were copied at second-hand from certain books containing scattered quotations from Cabbalistic writings; among them being Mackenzie's *Masonic Cyclopaedia*, King's *Gnostics*, and the works of S. F. Dunlap, L. Jacolliot, and Eliphas Levi. Not a line of the quotations in *Isis*, from the old-time mystics, Paracelsus, Van Helmont, Cardan, Robert Fludd, Philalethes, Gaffarel, and others, was taken from the original works; the whole of them were copied from other books containing scattered quotations from those writers. The same thing obtains with her quotations from Josephus, Philo, and the Church Fathers, as Justin Martyr, Origen, Clement, Irenaeus, Tertullian, Eusebius, and all the rest. The same holds good with the classical authors, - Homer, Ovid, Horace, Virgil, Plato, Pliny, and many others. The quotations from all these were copied at second-hand from some of the 100 books which were used by the compiler of *Isis*.[70]

Such plagiarism was used not only to fake the appearance of Blavatsky's personal erudition, but was also demonstrably used in the forgery of the so-called "Mahatma letters" – letters that mysteriously "materialised" at a shrine in the Theosophical Society's centre in Adyar, purportedly written by secret Tibetan masters. The psychical researcher Richard Hodgson, who had led the famous investigation of these claims in India in 1884-1885,[71] had let Coleman see some of the Mahatma letters personally. Coleman's conclusion was just as dismissive as it had been about the rest of Blavatsky's work:

> I find in them overwhelming evidence that all of them were written by Madame Blavatsky… . In these letters are a number of extracts from Buddhist books, alleged to be translations from the originals by the Mahatmic writers themselves. These letters claim for the adepts a knowledge of Sanskrit, Thibetan, Pali and Chinese. I have traced to its source each quotation

[70] Coleman, 'The Sources of Madame Blavatsky's Writings', 355.

[71] Hodgson et al., 'Report of the Committee Appointed to Investigate Phenomena Connected with the Theosophical Society'; Hodgson, 'Account of Personal Investigations in India, and Discussion of the Authorship of the "Koot Hoomi" Letters'.

> from the Buddhist scriptures in the letters, and they were all copied from current English translations, including even the notes and explanations of the English translators. They were principally copied from Beal's *Catena of Buddhist Scriptures from the Chinese*. In other places where the adept (?) is using his own language in explanation of Buddhistic terms and ideas, I find that his presumed original language was copied nearly word for word from Rhys Davids's *Buddhism*, and other books. I have traced every Buddhistic idea in these letters … and every Buddhistic term, such as Devachan, Avitchi, etc., to the books whence Helena Petrovna Blavatsky derived them. Although said to be proficient in the knowledge of Thibetan and Sanskrit, the words and terms in these languages in the letters of the adepts were nearly all used in a ludicrously erroneous and absurd manner. The writer of those letters was an ignoramus in Sanskrit and Thibetan … .[72]

It would certainly be unfair to judge Besant and Leadbeater solely by reference to the actions of their predecessor. Nevertheless, the type of religious creativity used by Blavatsky does tell us something about what we can expect of Theosophical authors. It offers a model for how "higher knowledge" may in fact have been constructed: in Blavatsky's case, higher knowledge about eastern religion and philosophy was constructed as a pastiche of elements from the Western scholarly literature that was available to her, and was only portrayed as perennial wisdom by being deceptively attributed to secret Tibetan masters. If we assume that something resembling this model also holds for occult chemistry, we have to ask: what were the *actual* sources used to create the visions of atomic and subatomic realities?

The answer to this question is not so hard to find, and we get good help from the authors themselves. In what reads as an astonishingly naïve statement, Besant and Leadbeater pointed out that there was a likeness between the "ultimate physical atoms" revealed by their investigations, and the depictions of the atom in Edwin Babbitt's (1829–1905) much earlier *Principles of Light and Color* (1878).[73] Babbitt was an American physician and a spiritualist who was deeply involved with developing new medical "cures" based on Mesmerism.[74] The *Principles of Light and Color* is best known for laying the foundation of a form of colour therapy, but it also contains occult revelations of much invisible nature, claiming to fill the gaps of science through

[72] Coleman, 'The Sources of Madame Blavatsky's Writings', 363.

[73] Besant & Leadbeater, *Occult Chemistry* (second edition), 10.

[74] For Babbitt's context, see Catherine Albanese, *A Republic of Mind and Spirit*, 406, 411.

clairvoyant visions and exalted insights. An extremely charitable interpreter might say that similarities between Babbitt's work and occult chemistry are due to the two sources actually having the same reference – that is, the real structure of atoms revealed independently by two "clairvoyant" observers. This was no doubt what Besant and Leadbeater wanted to suggest to their readers. On the suspicious reading, however, it is impossible to avoid the much more parsimonious hypothesis that Besant and Leadbeater – or their artists – imitated the earlier source, whether knowingly or not.

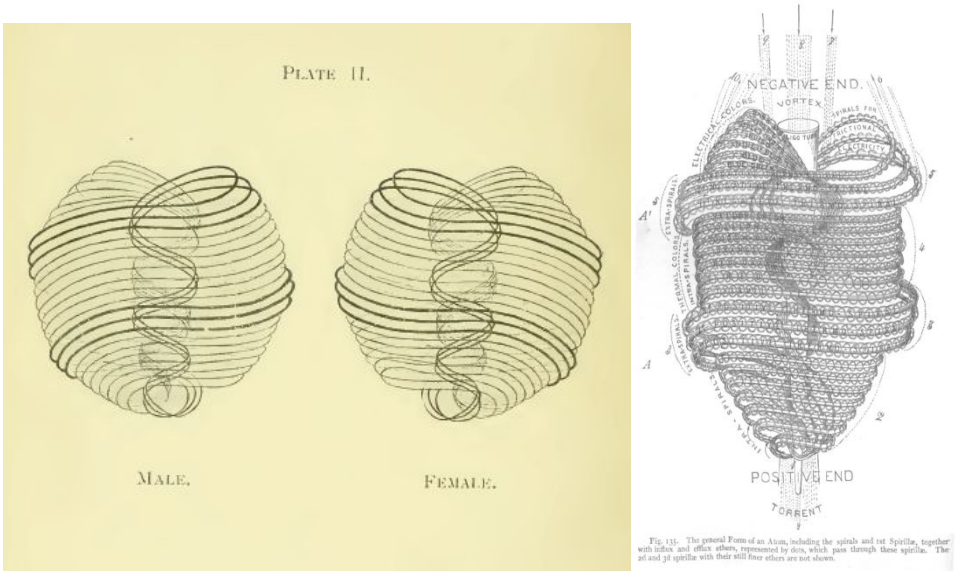


Figure 16: *Left:* the male and female counterparts of the "ultimate physical atom" according to Besant and Leadbeater (1919 edition, plate II, between pages 20 and 21). *Right*: representation of 'the general form of an Atom' according to Edwin Babbitt's *Principles of Light and Color*, 102.

While the aesthetic of the micro world clearly resembled that of Babbitt's earlier drawings, we still need to account for the claim that the clairvoyant visions could explain the atomic weight of the elements. This was, as we saw, an important claim: the number of "ultimate physical atoms" in each element appeared to correspond with their atomic weight, thus of course insinuating that these fundamental particles give weight to the elements. Moreover, the claim was that these relations only appeared *after* the visions had been made, when going systematically through the representations and analysing their mathematical features.[75] The implication was, once again, that these

[75] Jinarajadasa, 'Introduction to the Third Edition', 2.

visions really represented the actual chemical elements – how else could such a convincing correspondence be accounted for?

As before, the answer is found in an apparent imitation of available literature. In this case it is, however, somewhat harder to verify than in the cases of Blavatsky's plagiarism of literary sources, or the imitation of Babbitt's 'general form of an Atom'. The chemist Michael McBride has, however, done the necessary work.[76] Since atomic weights were at the time measured with varying results, and tables would not be in full agreement with each other, it is theoretically possible to isolate the specific source if there was one. By performing a careful quantitative analysis of the data of occult chemistry McBride discovered that the numbers of ultimate physical atoms made an almost perfect fit with atomic weights tabulated in a much-used German chemistry textbook from 1884, written by Lothar Meyer.[77] These lists had already been heavily revised by the early 20th century, but the numbers tabulated in the 1909 edition of *Occult Chemistry* correspond suspiciously well with the superseded knowledge of previous decades. Meyer's text-book would have been easily available to Jinarajadasa when he "calculated" the numbers from Leadbeater's clairvoyant visions in Dresden in 1907. As McBride argues, this strongly suggests that the numbers of *anu* "seen" were most likely adjusted or made up entirely during the production phase of the representations.[78] In any case, the clairvoyant representations refer to an 1884 chemistry textbook rather than to the actual structure of elements, just as Blavatsky's Mahatma letters referred not to the perennial wisdom of secret Tibetan masters, but to the translations and secondary literature of British scholars.

From Semantics to Pragmatics: The Rhetoric of Representation

The question of representation in occult chemistry largely collapses into pure *pragmatic* concerns. The claims to direct observation of otherwise unobservable entities, and the elaborate representations of them in the form of visual depictions and tables lining up the atomic weight of various elements, are best understood in terms of the rhetorical

[76] McBride, 'Serious Scientific Lessons from Direct Observation of Atoms through Clairvoyance'.

[77] Lothar Meyer, *Die Modernen Theorien der Chemie*, 140. See McBride, 'Serious Scientific Lessons from Direct Observation of Atoms through Clairvoyance'.

[78] Ibid.

effects they were designed to have on various audiences, and the ends one could achieve thereby. It is certainly possible that the occult chemists themselves – and no doubt most Theosophists familiar with the project – sincerely believed that they could deliver the goods. What is certain, however, is that the project as such was part of a discursive strategy of claiming scientific legitimacy for Theosophy.

As mentioned earlier, there is a pragmatic and rhetorical dimension to all scientific representation: any image is intended to produce effects in an audience, whether the audience consists of scientific professionals, students, or laypeople. Occult chemistry largely emulated the rhetorical dimensions of scientific production generally, but also presented the results of an occult methodology as corroborating and extending the scope of scientific representational practices. The results were disseminated to theosophists, educated laypeople, and to scientific professionals. All of this may be seen as special cases of what Olav Hammer has called "scientism" as a discursive strategy:

> the active positioning of one's own claims in relation to the manifestations of any academic scientific discipline, including, but not limited to, the use of technical devices, scientific terminology, mathematical calculations, theories, references and stylistic features – without, however, the use of methods generally approved within the scientific community, and without subsequent social acceptance of these manifestations by the mainstream of the scientific community … .[79]

The attempt to make use of the persuasiveness of science was, however, a much less successful strategy than hoped for. An obvious but ironic reason for this was noted earlier: while it was hoped that a focus on methodology would strengthen Theosophy's case by demonstrating the value of its contributions, it actually ended up underscoring the vast differences between scientific and Theosophical knowledge production. Occult chemistry positioned itself as ambitiously solving the problem of representation in physical science, yet its methodology was strikingly naïve when compared to the practices it set itself up against. A focus on methodology underscored the difference between "scientific" and "scientistic" discourse as defined by Hammer. As Mark Morrisson observes, 'occult chemistry can never persuade the scientific world, because

[79] Hammer, *Claiming Knowledge*, 206.

its defense relies entirely upon *resemblance* and *correlation*, not upon the kind of rhetorical persuasion that [is present] in actual reproducible laboratory work'.[80]

There is, however, yet another reason why the rhetoric backfired. The practice of resemblance and correlation to what is already known in science is risky if one also claims to have privileged access to higher knowledge about nature. As we have seen, the clairvoyant visions of the atom were in accordance with the picture of late-Victorian ether physics, and with incomplete models of the periodic table that had even been updated before the occult chemists had published their results. The novel features that the occult chemists pointed to – such as the correspondence between the number of *anu* and the atomic weight of an element – did not contradict present knowledge, but simply attempted to fill gaps in it. However, it would not be long until new branches of physics filled these gaps themselves. By the 1920s, quantum mechanics had succeeded in producing models of the atom, electrons and other subatomic particles that were capable of explaining the periodic table of the elements. The enormous predictive power of these developments would take mundane chemistry and physics to new theoretical and technological grounds that were simply unimaginable even by the most clear-sighted person of the 1890s. Science would soon convey an image of the subatomic world that had very little in common with that of late-19th century ether physics and the occult chemistry built on it.[81] Instead of "catching up" with Theosophical higher truth, mainstream science rapidly raced away from it.

3 Science contra Gnosis: Conceptual Revolutions and the Stagnation of Theosophical Science

How did Theosophy's distinctly late-Victorian view of physics and chemistry respond to the theoretical upheavals of the early decades of the 20th century? In contrast to the intense fascination with the strangeness of relativity and quantum mechanics

[80] Morrisson, *Modern Alchemy*, 94.

[81] It is quite remarkable to note the attempted revival of "occult chemistry" in the 1980s and 1990s – reinforced first with the notion of quarks in modern particle physics, and, when that didn't work, with the alternative theory of "superstrings". See e.g. E. Lester Smith, *Occult Chemistry Re-Evaluated*; Stephen M. Phillips, *Extrasensory Perception of Quarks*; idem, *ESP of Quarks and Superstrings*. For a brief analysis, see Asprem, 'Theosophical Attitudes to Science'.

characteristic of esoteric attitudes to science in the post-war era, Theosophists were generally reluctant and ambivalent in their treatment of such subjects. The program of occult chemistry continued to take up much space in the Theosophical literature throughout second-generation Theosophy, following the outline established by Besant and Leadbeater. But there were also some attempts at reconciling this program with new directions in physics. In this final section I will look at a couple of works that grappled with the difficult task of harmonising a rapidly changing physics with the revealed higher truths of Theosophy's clairvoyant science.

The first Theosophical work to cover the field of relativity theory in any extent appears to have been the booklet *Studies in Occult Chemistry and Physics*, published by the Theosophist and astronomer G. E. Sutcliffe in 1923. The book aimed to give equal weight to "Eastern" and "Western" science, described as two complementary "schools".[82] Sutcliffe took Einstein's relativity theories as constituting the most important representative of "Western science" at the present time. The "Eastern" school had little to do with the geographical Orient: it was represented by the clairvoyant exploration of occult chemistry, which, as we have seen, was produced by British Theosophists in London and Dresden, rather than by ancient sages of the Orient. Sutcliffe's ambitions were at least as high as those of his forbears. The book's title in fact suggests a *generalisation* of the field of occult chemistry, extending its scope to contemporary advances in theoretical physics.

His solution is illustrative of the problematic compromises that had to be made between prior investments in old conceptual structures, and emerging scientific paradigms that were starting to make the old scientific investments look dated. In his attempt to show that occult investigations could be reconciled with the new theories of relativity, Sutcliffe proposed a brand new theory of gravity. Unlike the account of gravity proposed by Einstein's general relativity, however, Sutcliffe's theory was based on late-Victorian ether physics. His style of reasoning bears the mark of someone who has acquired his knowledge of conventional physics from British research traditions of the late 19th and early 20th centuries: Sutcliffe's synthesis and reinterpretation of Einstein is in a tradition of British anti-relativism that makes liberal use of the concept of ether.[83]

[82] Sutcliffe, *Studies in Occult Chemistry and Physics*, v-vi.

[83] Ether physics was a crucial component of physics in Britain, as we have seen, and was part of the curriculum at Trinity College, Cambridge, as late as 1910. See Goldberg, 'In Defense of the Ether', 123.

Thus, when Sutcliffe argued with the relativists over the interpretation of the famous Michelson-Morley experiment, he simply followed an established scientific tradition. The dominant interpretation of this experiment, which had failed to find the predicted effect of a stationary ether on the relative speed of light, was for a long time that the ether was itself dragged along with heavy bodies, making it practically impossible to detect any difference in the velocity of light.[84] Sutcliffe could even paraphrase one of the leading British physicists of the 1920s, James Hopwood Jeans, as saying that 'each observer must carry a complete ether about with him'.[85] Taking this idea further, Sutcliffe advanced his theory of gravity based on the contraction and expansion of the ether that each body was thought to drag along with it: 'gravity is one of the effects of an *expanding* sphere of ether, whilst electrical phenomena are functions of a *contracting* sphere'.[86] From there, Sutcliffe the scientist was drawn into a long dialogue with Einstein's general relativity over the structure of space-time and the role of the ether.[87] The point of all of this was in the end to argue for a privileged frame of reference, based on the concept of ether, and consequently to argue for the superiority of the ether-based metaphysics of occult chemistry – now expanded to the field of modern theoretical physics. The bottom-line of this approach, reminiscent of Blavatsky's rhetoric, is summarized in Sutcliffe's formulation in the introduction:

> The Relativist draws down the *Veil of Isis*, and says: this knowledge is for ever hidden from us. The Teachers in the Eastern Schools reverently lift the veil, and say: the solution of even these most inner mysteries, by searching, thou shalt find.[88]

When we look at what is actually being unveiled in Sutcliffe's book, however, we do not find much *new* knowledge. The author relies entirely on the clairvoyant investigations of his Theosophical superiors. For the rest, his exercises are purely theoretical, and aimed rather hopelessly at harmonising old conceptual structures with new emerging ones. All in all, the book makes a contribution to the school of ether metaphysics: it

[84] Cf. Whittaker, *A History of the Theories of Aether and Electricity*, 411-417.

[85] Sutcliffe, *Studies in Occult Chemistry and Physics*, vi-vii. On Jeans, see chapter six above.

[86] Ibid., xv. Emphases added.

[87] Ibid., 129-174.

[88] Ibid., xv.

grapples with problems that are identical to those we find in other works of this genre, as discussed in a previous chapter.[89]

Another book struggling to incorporate the latest science is found in W. R. C. Coode Adams's *Primer of Occult Physics* (1927). The book follows up on Sutcliffe's project of extending occult chemistry to physics. The author starts on a familiar note when he stats that '[a]ny one keeping abreast of modern science cannot but be struck by the way in which it is passing over into materialism'.[90] This was the common rhetoric of the late Victorian period, as we have seen, but it is slightly ironic to find it reproduced in the same year as "quantum mysticism" was born.[91] 1927 was the year when Heisenberg presented the uncertainty principle that would soon generate countless attempts at idealistic interpretations of physics by authors bordering on the esoteric field. As Arthur Eddington famously contended, although with his tongue firmly placed in cheek, 'religion first became possible for a reasonable scientific man about the year 1927'.[92]

As its title suggests, Coode Adams's book truly reads as a primer, devoting separate chapters to overviews of central physical concepts such as time, space, matter, and energy. One is struck by the way in which the various chapters knit together a set of authorities that hardly go very well together. For example, Coode Adams references Lodge to argue that the ether is the most fundamental substance of reality, quoting his *Ether and Reality*, which was published as late 1925 and had a deep impact on the occult community's (mis-)understanding of contemporary physics.[93] Following Lodge's reasoning, Coode Adams is quickly led to contradict his opening statement about the increasing materialism of science, now writing that '[t]o the older physicist matter was the reality, and ether an inference. We now see that ether is the reality, and matter is entirely an inference drawn from certain of the behaviours of ether'.[94] To make the confusion complete, Einstein and the emerging "new physics" appears side by side with the anti-relativist Lodge in the two chapters dealing with the concepts of time and

[89] See especially my discussion of the reception of Lodge's *Ether & Reality* (1925) in *The Occult Review*, and the related debate in contributions to the *Journal of the Alchemical Society*. See chapter six above.

[90] Coode Adams, *Primer of Occult Physics*, ix.

[91] Cf. chapters four and six.

[92] Eddington, *The Nature of the Physical World*, 350. For the correct context of this much misused statement, see my discussion of Eddington's philosophical views in chapter six above.

[93] See my discussion of the reception of this book in *The Occult Review*, in chapter six.

[94] Coode Adams, *Primer of Occult Physics*, 53.

space.[95] The chapter on matter predictably revisits the case for occult chemistry, based once again on ether metaphysics.[96]

Despite these idiosyncrasies Coode Adams discusses the implications of the special and general theories of relativity with regards to time with some accuracy. He reveals knowledge of the "block universe" interpretation of the relativistic space-time continuum, according to which space-time is a four-dimensional structure where the relation between all events are fixed once and for all and the passage of time merely an illusion.[97] However, when Coode Adams proceeds to discuss the implications of this interpretation, which is typically seen as *deterministic*, a curious emphasis occurs:

> Let us therefore consider the possibilities which this theory opens up to us. First of all we are *relieved from the thraldom of time*. We are not condemned any longer to the rigid materialistic ideas that the past is the past, and that the future is utterly beyond the scope of knowledge of any mind. The possibility of a state of consciousness in which both past and future are open, such as we believe exists in the mind of the Logos and, to a certain extent, in our higher selves, this state of consciousness, which formerly would have been derided at once by the external world as absurd, is now a possible conception.[98]

That the space-time continuum should relieve us 'from the thraldom of time' is far from evident. It seems clear that Coode Adams connects this statement with the limitations on knowledge about the past and the future, rather than the question of free will versus determinism. According to Coode Adams, the view that the future is beyond our possibility for knowledge can be dismissed as a 'rigid materialistic idea'. Strangely, then, the contrary view that definite knowledge of the future *is* possible is portrayed as being freed from the thraldom of time. Others might recognise this peculiar form of freedom by a different name: "determinism". At the very least, the rhetoric here appears to be the exact opposite of the arguments over physics and determinism that we saw connected with the emerging quantum mechanics, particularly the arguments against Laplacian

[95] Ibid., 9.

[96] Ibid., 32-44.

[97] For an accessible introduction to interpretations of relativistic space-time, see Kennedy, *Space, Time, and Einstein*.

[98] Coode Adams, *Primer of Occult Physics*, 19.

determinism developed from Heisenberg's uncertainty principle.[99] Moreover, even to the extent that this interpretation of general relativity dismisses the arrow of time (e.g. the distinction between past, present, and future) as illusion, it does certainly not follow that it is possible to achieve 'a state of consciousness in which both past and future are open'. That promise remains just as ephemeral as before. The only implication would be that possessing such knowledge, if it had been possible, would not make any difference what so ever since all events are already eternally fixed.

Continuing on this track, however, Coode Adams implied that there is a 'Supreme First Cause' of the universe, and that this cause possesses a consciousness of its own that can be connected to the Theosophical concept of the "akashic records":

> To Him, therefore, the whole plan is seen at once, past and future. There therefore exists a complete map, so to speak, of all events, both past and future, which is simply the fourth dimensional continuum mentioned previously. This might be described as the memory of God and in Theosophy is known as the "Akashic Records".[100]

How far we have come from the Einsteinian conception! Needless to say, even the possibility of a "privileged frame of reference" that would be required to have an absolute knowledge of the sequence of events, is completely contrary to the position of relativity theory.

The eclecticism of Coode Adams' book results in a considerable number of internal inconsistencies and contradictions, which, after all, give an excellent illustration of the difficult situation Theosophy's "gnostic science" found itself in when the conceptual contents of science inevitably changed. Theosophical authors such as Coode Adams and Sutcliffe throw "old" and "new" physics together in order to make a pastiche of physical theory that seems acceptable enough in light of the esoteric doctrines revealed through exalted gnosis.

* * *

The occult science of direct perception continued to generate much enthusiasm in Theosophical circles through the early decades of the 20th century, despite the fact that

[99] Cf. my discussion in chapter four.

[100] Ibid., 21.

the promised corroboration by mainstream physics and chemistry failed to manifest. In a short systematic overview published in 1934 the scientists and science writers E. Lester Smith, V. Wallace Slater and Gerard Reilly still expressed a strong optimism on behalf of occult chemistry. Following up Besant's original ambitions, they focused less on the substantial *discoveries* of the discipline than on its *method*, with all enthusiastic expectations intact:

> We believe that in the years to come a new chemistry will arise, built up on a twofold foundation; the clairvoyant technique will then be accepted as a valid and valuable tool, and will be used alongside other methods of research, because in time the inevitable limitations of the latter will be seen, and a new instrument in the search for truth will be welcomed.[101]

The introduction of clairvoyants into chemistry labs remained a pipe dream. There were, however, other professional overlaps of some significance, which were used for all their worth to boost the legitimacy of the occult chemistry program. One episode that deserves to be mentioned briefly concerns the chemist and physicist Francis Aston, and his 1912 discovery of isotopes. Aston was developing a new way to experiment with rare gases at Cambridge when he noticed a strange "shadow element" following atoms of the relatively new and little understood gas neon.[102] Aston first thought he had found a new element, and enthusiastically named it "meta-neon". As he admitted in a footnote to a 1913 paper, where his discovery was first announced, the term meta-neon had been borrowed from Besant and Leadbeater's 1909 publication of *Occult Chemistry*.[103] According to Aston, the "new element" that Besant and Leadbeater had discovered clairvoyantly and given the name meta-neon had been given an atomic weight number that came very close to that of Aston's "mystery element". Aston thus admitted a kind of precedence for occult chemistry, of the type that Besant had explicitly hoped for in her first paper on the subject back in 1895.[104]

With additional discoveries by Frederick Soddy and Niels Bohr in the following

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[101] Lester Smith, Slater, & Reilly, *The Field of Occult Chemistry*, 58.

[102] Cf. Hughes, 'Occultism and the Atom', 31-35.

[103] This paper, which was probably delivered to the British Association meeting in Birmingham in September 1913 was recently discovered among Aston's notes and unpublished papers by the historian Jeff Hughes. See Hughes, 'Occultism and the Atom', 34. Cf. Besant & Leadbeter, *Occult Chemistry*, 84-85.

[104] Cf. Besant, 'Occult Chemistry', 211.

years, the significance of Aston's meta-neon was, however, soon to be reinterpreted by the scientific community. It became clear that what he had seen was not a new element, but rather an isotope of the element neon.[105] Jinarajadasa, who we previously met as Leadbeater's protégé, would later comment on the episode when he was writing in the capacity of editor of the third edition of *Occult Chemistry* (1951) and as the president of the Theosophical Society. Apparently thinking that any corroboration would do, he was ready to discard meta-neon and instead claim the discovery of isotopes for Theosophy. While this was cast as fulfilling the agenda set by Besant more than half a century earlier, there is little wonder that the claim would appear rather unconvincing to chemists.[106] Soddy's 1921 Nobel prize for developing the theory of isotopes was never in any real danger.

CONCLUSION

This chapter has discussed some general trends in the Theosophical engagement with the natural sciences through its first and second generations. First of all, we have seen that the Theosophical project was formed in a certain cultural climate characterised by public antagonism between "science" and "religion" – an antagonism that Theosophy attempted to replace by reconciliation through a critical engagement with both, viewed through the lenses of higher knowledge. The epistemological foundation on which Theosophical authors built this negotiation was that of an open-ended naturalism. As seen in previous chapters, open-ended naturalism was an important epistemological field for late-Victorian debates about science and religion, and it was generally critical of the kind of two-worlds separation between "natural" and "supernatural" required by disenchantment. This leads to a second point: Theosophy's *rejection* of a dualistic two-world solution gave rise to rather predictable difficulties that have persisted through its history: the threat of empirical disconfirmation, and a problem with scientific change. These problems come to the fore in occult chemistry, and in Theosophical authors' attempts to come to terms with the revolutions in physics of the early 20th century.

The two problems have their origin in the peculiar role that strategies for attaining higher knowledge acquire in the context of a broadly naturalistic epistemology. In the context of occult chemistry, and arguably in Theosophy at large,

[105] Hughes, 'Occultism and the Atom', 34-35. Cf. my discussion in chapter four.

[106] Jinarajadasa, 'Introduction to the Third Edition', 4-5.

strategies for higher knowledge look more like expansions of the sphere of "reason" than as completely personal, experiential, and non-verifiable "gnosis". The higher visions are clear, distinct, and discursively communicable; they are even communicated to scientists, together with the claim that they faithfully represent the very same entities that ordinary empirical science works with. Such representations give the possibility of empirical predictions and independent scientific corroboration, but also their opposites. When claims are situated inside of the sphere of empirical science, and addressed directly to scientists, one must also be ready to be proved wrong.

The problem with scientific change was already present with Blavatsky, as we saw in the first section. Considered as a perennial system of wisdom, Theosophy must always try to come out on top in comparisons, superior to a modern science that after centuries has only now started to approach the "truth" known to the sages since primordial times. Startling new discoveries are interpreted as approximations to the wisdom of all ages, the general expectation being that science will gradually approach the perennial truths that Theosophy itself already possesses. Such a strategy may seem convincing in any given period – whether the 1880s or the 1930s. However, the approximating scientific truths of one decade can soon become the superseded "pseudoscience" of the next. This creates a fundamental tension for perennialists aligning themselves with science: whereas perennialism demands *stability*, the scientific projects that Theosophy has sought strategic alignments with have remained in a state of continual conceptual change. Thus, while Besant's alignment of Theosophy with the physics of ether may have been advantageous in the late 19th century, it caused serious trouble for the post-relativity generation. The conceptual conservatism inherent in the notion of perennial wisdom accounts for the struggles faced by authors such as Code Adams, but also for the continued presence of talk about ether in Theosophical discourse even today: elevating some exotic scientific concepts of one's particular historical period to expressions of *unchanging, higher truth* leads to a situation where elements of superseded scientific cultures will be carried on and reinterpreted, even when the scientific community at large has abandoned the concepts in question and moved on to entirely new lines of inquiry. This conflict is a predictable result of dismissing disenchantment and negotiating science and higher knowledge in the framework of an open-ended naturalism.

12

Perceiving Higher Worlds

Two Perspectives

> I slept with faith and found a corpse in my arms on awakening; I drank and danced all night with doubt and found her a virgin in the morning.
>
> Aleister Crowley, *The Book of Lies* (1913), chapter 44.

INTRODUCTION: A COMPARATIVE APPROACH TO HIGHER KNOWLEDGE

Esoteric claims to higher knowledge are usually about much more than stating superior facts, no matter how exotic or unusual. The attainment of gnosis will typically be inscribed in a soteriological narrative concerned ultimately with salvation: higher knowledge tells the initiate not only how the world works, but also how to act in it and how to achieve liberation from its constraints. Its wisdom speaks of values, ethics, and metaphysical realities as much as of higher factual truths. Yet, these normative concerns are not simply left to dogma or opinion; they are considered the subject of real knowledge. No intellectual sacrifice is needed, or so it is suggested, to know the "good" and the "beautiful"; just as there can be a science of external nature, there can be a science of hidden essences, of higher truths, and of ultimate purpose. What, exactly, such an esoteric science would look like, and how it would be related to the "exoteric" sciences, is a question that has been answered in different ways by modern esoteric spokespersons.

In this final chapter we shall consider two modern prophets emerging out of different but related strands of late-19th century esotericism: Rudolf Steiner (1861–1925) and Aleister Crowley (1875–1947).[1] These two figures are central to modern

[1] For biographical information on Steiner, I rely on the recent and thorough biography by Helmut Zander, *Rudolf Steiner*, the extremely detailed reference work in Zander, *Anthroposophie in Deutschland* (two volumes), and on the 1928 English translation of Steiner's autobiography, *The Story of My Life*. See also the two excellent entries in the *Dictionary of Gnosis and Western Esotericism*: Cees Leijenhorst, 'Steiner, Rudolf'; idem, 'Anthroposophy'. While Steiner's autobiography is unreliable when it comes to details of

esotericism, but have, to the best of my knowledge, never been the subject of a comparative analysis. Yet, intriguing parallels exist between the two authors, as well as subtle differences that go to the heart of the problem of disenchantment and the relation between "reason", "faith", and "gnosis". The parallels are striking. Both broke out from pre-existing esoteric traditions and created novel syntheses: Steiner from Theosophy, and Crowley from the occultist ritual magic of the Hermetic Order of the Golden Dawn. Both treasured science highly, and had broad and serious intellectual interests in fields much more reputable than occultism. Both came to found new religious communities, and both saw their esoteric and religious insights as having the highest importance for the political and moral future of a troubled and war-ridden Europe. Finally, both took up the ambition of *democratising* esoteric knowledge by reaching out to the people, and making higher knowledge accessible to the masses. While their strategies for doing so were quite different, as were their relative successes, they do have one thing in common that makes them particularly relevant to the present discussion: rather than merely communicating the results of their illuminated insights, both Steiner and Crowley aimed to set forth the *methods* for achieving higher knowledge. They authored didactic material, designed to instruct would-be initiates on how to perceive higher knowledge for themselves. In this literature we find sources fit for an intriguing comparison of two influential esoteric epistemologies of the early 20th century.

While the abovementioned parallels provide enough common ground to justify a comparison, the most promising prospect for such an approach lies in uncovering their differences. Steiner and Crowley came out of different intellectual and cultural traditions, which inevitably formed their perspectives on higher knowledge and its attainment. Steiner, who was Crowley's senior by fourteen years, was formed by the intellectual cultures of Vienna and Weimar. His intellectual masters were the German idealists and Weimar classicists – above all Goethe, whose natural-scientific works he

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chronology, it is valuable as a source for Steiner's self-perception in later years. For Crowley, the standard biographies used are Lawrence Sutin, *Do What Thou Wilt*, and Kaczynski, *Perdurabo*. For an important discussion of the problems with Crowley biographies, see Marco Pasi, 'The Neverendingly Told Story'. The problems Pasi identified were, unfortunately, not remedied by the more recent biography, Tobias Churton, *Aleister Crowley* (2011). See also the essays collected in Henrik Bogdan & Martin P. Starr (eds.), *Aleister Crowley and Western Esotericism*.

edited in the 1880s – but also Schiller and Fichte. Schopenhauer and Nietzsche were important influences on Steiner as well, and he would describe his encounter with the latter in rather pathetic terms in his autobiography.[2] Crowley, for his part, spent three years at the University of Cambridge in the mid-1890s and developed an intellectual fascination with Victorian naturalism in the style of T. H. Huxley and Henry Maudsley, the evolutionistic anthropology of James George Frazer, and eventually the psychological and philosophical theories of William James.[3] Steiner's intellectual background is distinctly German, as much as Crowley's is distinctly British. A comparison between the two thus sheds light on an important question: How do different cultural and philosophical contexts influence perspectives on higher knowledge?

* * *

While both Crowley and Steiner were immersed in contemporary academic discourses, the nature and degree of their involvement differs significantly. While Steiner was only 21 years old and lacking formal academic credentials, he was invited through his personal network to be a co-editor of the scientific works of Goethe. This project became a springboard to a formal academic career. In 1886 he published a major work on the epistemology implicit in Goethe's worldview (*Grundlinien einer Erkenntnistheorie der goetheschen Weltanschauung mit besonderer Rücksicht auf Schiller*). In 1891 he was awarded a PhD from the University of Rostock with a dissertation on Fichte, later

[2] 'There he lay on a lounge enveloped in darkness, with his beautiful forehead – artist's and thinker's forehead in one. It was early afternoon. Those eyes which in their blindness yet revealed the soul, now merely mirrored a reflection of the surroundings which could find no longer any way to reach the soul. One stood there and Nietzsche knew it not. And yet one could have believed, looking upon that brow permeated by the spirit, that this was the expression of a soul which had all the forenoon long been shaping thoughts within, and which now would fain rest a while. An inner shudder which seized my soul may have signified that this also underwent a change in sympathy with the genius whose gaze was directed toward me and yet failed to rest upon me. The passivity of my gaze so long fixed won in return a comprehension of his own gaze: his longing always in vain to enable the soul-forces of the eye to work.' Steiner, *The Story of My Life*, 181. This experience moved Steiner to write the book *Friedrich Nietzsche: Ein Kämpfer gegen Seine Zeit* (1895).

[3] On these intellectual influences on Crowley's esoteric writings, especially of the Victorian naturalists, see Asprem, 'Magic Naturalized'. For the influence of James, see Pasi, 'Varieties of Magical Experience'.

published as *Wahrheit und Wissenschaft* (1892). These intellectual endeavours, dealing with problems of epistemology and free will in a post-Kantian, idealistic framework, led to the publication of Steiner's major philosophical work in 1892, *Die Philosophie der Freiheit*. He was thus established as a philosopher well before 1900, taking active part in the academic discourse of his time. The position he sought to develop on topics such as the philosophy of science, ethics, and free will straddled the traditions of classicism and romanticism, and provided an intellectual foundation for his later esoteric involvement.[4] Importantly for our present concerns, Steiner's academic philosophy was founded on an explicit opposition to Kantian epistemology. As he wrote in the opening of his doctoral dissertation in 1891, 'Contemporary philosophy is suffering from an unhealthy belief in Kant'. [5] Against such 'Kant-Glauben' Steiner sought an epistemological position in which human knowledge knew no boundaries, and no separation between the world of facts and the world of values was needed. In short, he had formulated a philosophical rejection of the intellectual sacrifice demanded by disenchantment, long before identifying with any esoteric system of thought.

For Crowley, the situation was rather different. He studied philosophy and English literature in the Moral Science Tripos at Cambridge between 1895 and 1897, but spent more time pursuing extracurricular activities ranging from sex and poetry to chess and mountaineering. He never received any formal degree, nor did he publish any academic paper or monograph. He did, however, stay updated on contemporary intellectual fashions, and participated in public debates on matters of politics, culture, art, and religion through his numerous essays in magazines such as *Vanity Fair* and *English Review*, and in newspapers such as *Daily Mail* and *New York Times*.[6] While Steiner was an accomplished academic writer, Crowley was a self-educated essayist, enjoying significant personal relationships with members of the intelligentia. Remaining essentially an autodidact, Crowley absorbed central ideas from current scholarship, and constantly sought to rethink and revise his esoteric practices in light of them. Thus, for

[4] For the ambiguous place of romanticism and *Naturphilosophie* in Steiner's thought, see Zander, *Anthroposophie in Deutschland*, vol. 1, 907-928.

[5] 'Die Philosophie der Gegenwart leidet an einem ungesunden Kant-Glauben'. Steiner, *Wahrheit und Wirklichkeit*, vii.

[6] For a bibliography of Crowley's contributions to magazines and newspapers, see Kaczynski, *Perdurabo*, 676-682.

example, his view on magic was at one point dominated by a strictly (ontologically) naturalistic understanding of neurological changes in the brain, while he would later supplement his understanding by the much more romantic idea of "genius" as found in William James' *Varieties of Religious Experience*.[7]

Moreover, Crowley showed a consistent interest in taking scientific *methodology* seriously as a tool for esoteric practice.[8] In following this agenda he was clearly related to the English SPR, which he would have encountered while studying in Cambridge. The psychical researchers' attempt to study "occult" phenomena within the parameters of an open-ended naturalism provides an epistemological context for Crowley's later innovations. Crowley's attempted rehabilitation of magic was strongly influenced by the epistemological possibilities as well as strictures imposed by Victorian naturalism on claims to knowledge in general. The comparison between Steiner and Crowley thus becomes one of esotericism in the light of two different epistemological contexts: Steiner's post-Kantian German idealism, versus Crowley's British naturalism. How do these different contexts affect the pursuit of higher knowledge and the relation between reason, faith, and gnosis?

1 Two Careers in Occultism

Steiner: Philosopher, Theosophist , Anthroposophist

Rudolf Steiner is undoubtedly best known as the founder of the anthroposophical movement; together with his followers he was the originator of Waldorf pedagogy, biodynamic farming, eurythmic dance, and anthroposophical medicine. But the road there was long, and went through a number of phases. A brief biographical sketch is necessary to appreciate the chronology of the events, and see the gradual development from early interests in natural science, through young adult interest in philosophy, to the embrace of occultism, and the subsequent mature development of a new esoteric system in the form of anthroposophy.

Steiner was born on February 25, 1861, in the village of Kraljevec in present-day Croatia, then in the Austro-Hungarian Empire, as the son of a telegraph operator and a

[7] Cf. Pasi, 'Varieties of Magical Experience', 138-143.

[8] Asprem, 'Magic Naturalized'.

former housemaid.[9] The family moved frequently during Steiner's upbringing, and his experience with education was unusual: in the village of Neudörfl outside of Vienna he went to a school without age-separated classes and was able to rush through it three years ahead of time to attend the "Bürgerschule" in Wiener Neustadt. After a brief period of home-schooling by his father, he was sent to "Realschule", and soon excelled in the exact sciences, especially mathematics and physics.[10] In 1879 the whole family moved to Inzerdorf, closer to the city of Vienna, so that Steiner could continue his studies of natural science at Vienna's Technische Hochschule. There he followed courses in mathematics, physics, botany, zoology, and chemistry, as well as German literature. In 1882, while still pursuing these studies, Steiner was suggested by his German teacher, Julius Schröer, as a co-editor for a new edition of Goethe's collected works. Schröer was an important influence on Steiner's future career, as he was also Steiner's guide to the canon of German philosophy.[11]

Steiner was about to embark on his career as an idealist philosopher of science, and in the middle of the 1880s he would start publishing his first major philosophical works. It was also at the end of that decade that he would make a first acquaintance with occultism. At the end of 1889 Steiner was introduced to a circle of Theosophists active in Vienna, and became a regular participant in their café meetings. The heart of the group was the pioneer feminist and Theosophist Marie Lang; another prominent member was Friedrich Eckstein, a Viennese Jew, Marxist, Theosophist, and personal friend of Sigmund Freud.[12] Through these acquaintances, Steiner would be introduced for the first time to the Theosophical literature, such as Blavatsky's recently published *Secret Doctrine* (1888), and Alfred Sinnett's influential *Esoteric Buddhism* (1883).

Steiner had thus already come into contact with intellectual representatives of occultism when he was writing his PhD dissertation and developing his *Philosophy of Freedom*. However, his proper career in occultism would only begin a decade later,

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[9] There has been some confusion as to the date of Steiner's birth, as he gave the date 27 February in his autobiography. Helmut Zander has however convincingly argued that 25 was the date of his physical birth, while 27 was the date of his christening – which Steiner would later come to describe as his esoteric, *spiritual* birth. See Zander, *Rudolf Steiner*, 13.

[10] See Zander, *Rudolf Steiner*, 19-20.

[11] Ibid., 29-32, 43-45.

[12] Ibid., 61-64.

shortly after the turn of the century. Steiner had now relocated to Berlin, where he was going through a political phase, involved with radical socialist and anarchist circles, absorbing Haeckel's monism, and publicly advocating atheism.[13] Against this background, Steiner was invited in the autumn of 1900 to give a lecture on Nietzsche to a group of Theosophists. Steiner's radicalism must have impressed the occultists, for this became the first of a series of frequent lectures for the German Theosophical Society. Continuing first with a lecture on his intellectual hero, Goethe, Steiner suddenly and unexpectedly switched to a quite different type of subject matter for his lectures. In 1901, he set out on an exploration of German Christian mystics, from Meister Eckhart to Valentin Weigel and Jakob Böhme. He also lectured on other major figures in the history of Western esotericism that had been active in the German cultural sphere, notably Agrippa, Paracelsus, and Giordano Bruno. The result of this sudden and intense immersion into mysticism and esotericism was the publication of his *Mystik im Aufgange des neuzeitlichen Geisteslebens*, appearing at the end of 1901.

This publication marked the emergence of Steiner the Christian mystic, but it was also the beginning of his career as a Theosophist. In the same year, Annie Besant had published her book on *Esoteric Christianity*, which Steiner quickly absorbed. In October 1902, Besant came to Berlin to found a German section of the Adyar branch of the Theosophical Society.[14] In her opening speech to the German members, she proclaimed a policy of "Theosophical plurality", which stressed that every nation was free to adopt and develop the principles of Theosophy to their specific national character. Steiner, who was appointed General Secretary of the new German section, would follow this encouragement to the full.

In the years that followed, Steiner kept busy developing his own take on Theosophy. He read up on the "neo-Theosophical" literature that was coming out of the Adyar group, including Leadbeater's work on clairvoyance, astral travel, and esoteric

[13] Zander, *Anthroposophie in Deutschland*, vol. 1, 533-537.

[14] This was not the first official Theosophical group in Germany, however. The original society had opened a section in Germany in 1894, just one year before the international schisms in Theosophy broke out, and the American branch separated from the Adyar branch. The American branch then opened a new section in Germany in 1896, but this one soon dissolved into new schisms, before the prominent German Theosophist Franz Hartmann founded Internationale Theosophische Verbrüderung in Munich in 1897. For an overview of Theosophy in Germany, see Zander, *Anthroposophie in Deutschland*, vol. 1, 75-346.

physiology, and set out to write his own fundamental works on esoteric epistemology.[15] His first publication in this regard was another introduction to Theosophy written for the German audience, entitled *Theosophie* (1903). The publication of this book can be seen as the completion of Steiner's "conversion" to Theosophy: that is, it was the final stage of his transformation from a "serious" philosopher to a wholesale occultist.[16] The book was followed in 1904 by the first edition of *Wie erlangt man Erkenntnisse der Höheren Welten*, and the visionary *Aus der Akasha-Chronik*. Both of these works first appeared in serialised form in the new German Theosophical journal, *Lucifer-Gnosis*, founded by Steiner and appearing for the first time in January 1904. Another of Steiner's major theoretical works in occultism was created in this period, namely *Die Geheimwissenschaft im Umriss*, finally appearing in book form in 1909. As Helmut Zander points out in his thorough and systematic treatment of Steiner's work, the four books mentioned above in effect developed four central strands of Steiner's Theosophy.[17] An esoteric anthropology was presented in *Theosophie*, based on a further development of pre-existing Theosophical doctrines about subtle bodies; *Geheimwissenschaft im Umris* placed the anthropology in a broader esoteric cosmology; *Aus der Akasha-Chronik* developed an "emic historiography", giving detailed descriptions about the life of human beings in long lost lands such as Atlantis, Lemuria, and Hyperboraea, rivalling the accounts found in Blavatsky's *Secret Doctrine*. Underlying all these works, however, was a peculiar focus on "supersensible knowledge" (*übersinnlichen Erkenntnis*), the proper function, attainment, and use of which was explored in *Wie erlangt man Erkenntnisse der Höheren Welten*. It is in this work that a proper esoteric epistemology is developed, and it is this text that will serve as our main primary source later in this chapter.

These works clearly belonged within a Theosophical world of ideas, but tensions between Steiner's thought and the doctrines coming out of Adyar were building up. The Adyar society continued its emphasis on the "Oriental" tradition, while Steiner was careful to avoid anything eastern as far as he could.[18] Theosophy had caused a 'parting

[15] Cf. the useful chronology compiled in Zander, *Anthroposophie in Deutschland*, vol. 1, 546.

[16] Ibid., 545, 550-570.

[17] Ibid., 569.

[18] This struggle can be seen clearly by comparing the later editions (1914, 1918 and later) of *Wie erlangt man Erkenntnisse* to the earlier ones published in *Lucifer Gnosis*.

of East and West' in occultism already in the 1880s, as those who favoured "Western" traditions of Hermeticism, Rosicrucianism, and ceremonial magic felt left out of the increasingly "Oriental", but also anti-magical leanings of the Theosophical Society.[19] A similar dynamic was now at play within the neo-Theosophy of the Adyar society. In addition to increasing doctrinal divergences, there was an accumulation of organisational differences and power struggles following Besant's ascension to the presidency of the Adyar society in 1907. The event that finally ripped "Berlin" and "Adyar" apart, however, was the campaign started by Besant and Leadbeater in 1909 to promote the young Indian boy Jiddu Krishnamurti as the future Messianic "world teacher". Based on Leadbeater's clairvoyant exploration of karmic cycles and reincarnations, and on Besant's heterodox Christology, the Adyar society decided that Krishnamurti was destined to become a spiritual teacher on the level of Siddhartha Gautama and Jesus. While the world teacher campaign proved to be a highly successful one for the Theosophical Society in general, leading to a strong increase of its membership through the 1920s, it also had its casualties. Steiner voiced his scepticism of Krishnamurti to Besant during a meeting in Budapest in 1909, but the message fell on deaf ears. Eventually he decided he would have no more of it: Steiner formed the Anthroposophical Society in 1912 and took most of the German-speaking Theosophists with him.[20] Besant consequently cut the Germans off from the Society, making sure to denounce Steiner as an agent of the "black generals" and a conspirator of destructive Jesuit plots while she was at it.[21] Somewhat ironically, it had only taken a decade for Besant's "pluralistic" policy of national diversity to result in yet another Theosophical schism.

The Anthroposophical movement was born. Its headquarters were soon relocated to Dornach in Switzerland, where construction of the Goetheanum, a complex of buildings based on Steiner's "spiritual" architectonic principles, commenced in 1913. From the end of the Great War and until Steiner's death in 1925, Anthroposophy developed into a strong cultural force, spanning fields such as schooling, political ideology, religious observance, medicine, architecture, and agriculture. In contrast to

[19] On this topic, see Joscelyn Godwin, *The Theosophical Enlightenment*, 333-379. Cf. Gregory Tillett, 'Modern Western Magic and Theosophy'.

[20] Zander, *Rudolf Steiner*, 202-203, 205-208. Cf. idem, *Anthroposophie in Deutschland*, vol. 1, 147-172.

[21] Zander, *Rudolf Steiner*, 208.

the increasingly messianic "esoteric Buddhism" of the Adyar Theosophists, according to which Jesus Christ had only been one among many divine incarnations, the German anthroposophical movement retained a more traditional emphasis on the uniqueness of the Christian revelation. Steiner's Christology was, however, quite heterodox, and hardly compatible with official church doctrine.[22] Among the eccentricities of Steiner's esoteric Christianity was the notion of two different Jesuses being involved in the incarnation process – the "Nathanic" and "Solomonic" Jesus – born to separate pairs of parents that were both named Mary and Joseph, and belonging to two different lines of descent from David.[23] The association of Christ with the "light-bringer" Lucifer was undoubtedly another controversial point, accompanied by a reinvention of Satan in terms of the Zoroastrian divine antagonist, Ahriman. Breaking with the official dogma of existing churches did not matter, however, for in the early 1920s Steiner's movement established its own church, the "Christian Society" (*Christengemeinschaft*), with new sacraments, new liturgies, and new ecclesiastical arrangements.[24]

As so many of his generation, Steiner became increasingly politicised by the Great War. His esoteric speculations about the spiritual character and destiny of the world's races and nations became more defined in light of the historic clash of Europe's great Empires. In the wake of the Central Powers' unexpected defeat, Steiner's Anthroposophy became a part of the general *Lebensreform* and youth movement in Germany. Its relation to the Weimar Republic's frail democracy was ambiguous to say the least: Steiner's teachings had a clear authoritarian ring, and developed a rather crass polemic against "materialism", "liberalism", and cultural "degeneration". All of the above were cast as ailments of a fallen Germany, and the anthroposophical movement readily offered its remedies.[25]

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[22] On Steiner's Christology, see Zander, *Anthroposophie in Deutschland*, vol. 1,781-858.

[23] In addition to this innovation, apparently designed to harmonise the accounts in the Gospel of Luke and the Gospel of Mathew, Steiner followed Besant's esoteric Christology in separating Jesus from Christ and holding that the earthly Jesus made himself a vessel for the "Christ spirit" from the day of his baptism onwards. Cf. Besant, *Esoteric Christianity*; see also the discussion in James A. Santucci, 'The Conception of Christ in the Theosophical Tradition'.

[24] Zander, *Anthroposophie in Deutschland*, vol. 2, 1611-1678.

[25] On the politicisation of Steiner and anthroposophy, see Zander, *Anthroposophie in Deutschland*, vol. 2, 1253-1356.

Anthroposophy's answers all tended in the direction of "organicism", and were based on Steiner's "spiritual science" (*Geisteswissenschaft*); they belong to the sort of Weimar republic *Zeitgeist* that we have discussed in previous chapters. Each of the individual anthroposophical initiatives can be considered a part of this larger ideological constellation. For example, anthroposophical medicine was developed to contrast with the "materialistic" (and hence "degenerate") medicine of the establishment. It based itself on all sorts of pre-existing alternative therapeutic practices, especially homeopathy, but also hydrotherapy, air- and light cures, various dietary therapies, and "traditional" herbal remedies.[26] Added to these was a spiritual superstructure borrowed from Theosophy, as well as other esoteric therapeutic practices, such as Christian Science.[27] Similarly, the agricultural reforms implicit in anthroposophy's biodynamic farming was not only a form of ecological farming, but based itself on a "holistic" conception of organisms that took into account the esoteric dimensions of plant life postulated by Theosophy (such as the life-mediating ether body), but also the influence of the heavens – through the correspondence between metals and planets – on growth.[28] Finally, the first school of the extremely influential Waldorf pedagogy was founded in Stuttgart in 1919. The pedagogical system itself built on an eclectic mixture of reform- and classical pedagogy, filtered through a Theosophical anthropology, and Steiner's own theories about reincarnation, spiritual development, and the acquisition of knowledge.[29] The Waldorf schools spread internationally after Steiner's death, and remain the single most successful anthroposophical initiative today.

CROWLEY: PROPHET OF A NEW AEON

[26] Ibid., 1461-1463.

[27] On the latter, see especially Catherine Albanese, *A Republic of Mind and Spirit*,

[28] Zander, *Anthroposophie in Deutschland*, vol. 2,1586-1590. For this development, see also the work of Steiner's students and successors, notably Ehrenfried Pfeiffer (1899–1961), Lili Kolisko (1889–1976), and Agnes Fyfe (1898–1986). Later contributiors to biodynamic farming have emphasised what they claim are "non-causal" astrological influences on plant growth; see e.g. Fyfe, *Moon and Plant*; Nick Kollerstrom, *Astrochemistry*.

[29] See ibid., 1364-1454.

In terms of strictly organisational success and mainstream appeal, Steiner's work clearly overshadows that of Crowley. While hundreds of thousands of people have been directly involved with the organisations Steiner founded, whether through Waldorf schooling or the purchase of biodynamic agricultural products, only a few thousand people can today be counted as followers of Crowley's religious and esoteric innovations.[30] Measuring and comparing influence is hard, however, and there is little doubt that Crowley has been of unprecedented importance for the post-war development of occultism: fields such as Wicca, modern paganism, religious Satanism, and "chaos magic" would not have looked the same or even existed at all without his work. Crowley's contribution to the development of modern esotericism consisted above all in two things: the foundation of a new religious framework, and a thorough reinterpretation of magic. Appeals to science were crucial for both.

Aleister Crowley, Christened Edward Alexander, was born on 12 October 1875 in the small Spa town of Leamington in Warwickshire, England. His parents were independently wealthy due to the ownership of a family brewing business. They were also dedicated members of the Exclusive Brethren, a branch of the evangelical denomination the Plymouth Brethren. This denomination had been founded by John Nelson Darby (1800–1882) in the early 19th century; and in view of Crowley's later career as a religious figure and prophet of a new age, it is significant that Derby's Plymouth Brethren provided a distinctly *dispensationalist* theology, meaning that there was a strong focus on God's shifting relationship to humanity through different historical epochs ruled by different covenants.[31] It was also a strongly millenarian movement, believing that rapture and tribulations were imminent, in preparation of the Second Coming of Christ. According to Crowley's own testimony, these ideas were thoroughly internalised at a young age, to the extent that after playing alone in the garden one summer afternoon (at the age of eight or nine), he had believed that the hour of judgement had come:

[30] According to present-day representatives at the Goetheanum in Dornach, the Anthroposophical Society today has active societies in 50 countries, with a total of 52,000 members; the total number of anthroposophical institutions around the world, however, were estimated as high as 10,000. See Robin Schmidt, 'History of the Anthroposophical Society'.

[31] On this topic, see Bogdan, 'Envisioning the Birth of a New Aeon'. Cf. Sutin, *Do What Thou Wilt*, 17-18.

> He [Crowley speaking of himself in the third person] came back to the house. It was strangely still and he got frightened. By some odd chance everybody was either out or upstairs. But he jumped to the conclusion that "the Lord had come", and that he had been "left behind". … The child was consequently very much relieved by the reappearance of some of the inmates of the house whom he could not imagine as having been lost eternally.[32]

As he was reaching the rebellious age of his early teens, Crowley's mother got into the habit of naming him "the beast", apparently believing him to be the antichrist. This, too, the young boy internalised, and the beast of Revelations would remain a stable part of Crowley's identity throughout his life.[33]

In the year of his 20th birthday Crowley went to Cambridge and enrolled for the Moral Sciences Tripos at Trinity College. This was the beginning of a period of personal exploration and experimentation: within three years Crowley would become an active chess player, an aspiring poet, a mountaineer, and importantly, would discover his bisexual orientation and have his first homosexual experiences.[34] Cambridge was a stimulating intellectual environment. One of Crowley's life-lasting intellectual heroes, the anthropologist James George Frazer, was a fellow at Trinity, and so were some of the founding members of the SPR, namely Henry Sidgwick and Frederick Myers.[35] Moreover, Crowley's arrival in Cambridge coincided with the famous testing of the medium Eusapia Palladino, which was carried out at Myers' Cambridge residence in August and September of 1895.[36] The SPR was in other words not only present, but very *active* in Cambridge when Crowley entered university. Intellectuals were hotly debating the Society's tests of Palladino in newspapers and magazines such as *The Daily Chronicle*, *The Westminster Gazette*, *The Liverpool Daily Post*, *The British Medical Journal*, and the Spiritualist publication *Light*.[37] A scientific and naturalistic discourse on the occult was, in short, prominent in Cambridge in the mid-1890s. Given this public interest in occult

[32] Crowley, *Confessions*, 38.

[33] Sutin, *Do What Thou Wilt*, 20-21; Crowley, *Confessions*, 43.

[34] Cf. Sutin, *Do What Thou Wilt*, 35-39.

[35] Pasi, *Aleister Crowley und die Versuchung der Politik*, 133, n. 214; idem, 'Varieties of Magical Experience', 131-132. Cf. Asprem, 'Magic Naturalized', 144-145.

[36] Cf. Carrington, *Eusapia Palladino*, 51-57.

[37] See ibid., 54.

phenomena, it is perhaps not surprising that Crowley took a first, but rather superficial, interest in occultism while at Cambridge.

A deeper involvement with occultism only began in the summer of 1898, during a mountaineering holiday in Switzerland.[38] His father had died the year before, and Crowley acquired an inheritance of some £ 40,000 – a significant amount of money in the late 1890s.[39] While spending some of it in a bar in Switzerland, Crowley ran into the British industrial chemist Julian Baker. Attempting to challenge and impress the chemist with his knowledge of alchemy, Crowley soon discovered that his drinking buddy possessed a far more comprehensive knowledge of the subject than he did. Impressed, Crowley tracked down the chemist the next morning and implored him for initiation. Baker revealed that a secret group existed in London, and that he could introduce Crowley to someone who was much more versed in the ways of magic than himself when they returned to England. The man was another chemist, George Cecil Jones, and the group was the Hermetic Order of the Golden Dawn.

The meeting with Jones in October 1898 proved a turning point in Crowley's life, and the start of his career in occultism.[40] Jones first suggested new study material for Crowley, introducing him to *The Book of the Sacred Magic of Abramalin the Mage*, a 16th- or 17th century grimoire (or magical book) that had just recently been translated into English and published by the eccentric occult scholar Samuel Liddell "MacGregor" Mathers.[41] Baker and Jones also trained Crowley in the techniques of astral travel and the use of certain magical rituals designed for protection. In November 1898, he was initiated into the Golden Dawn.[42]

The Hermetic Order of the Golden Dawn had been founded in 1888, and can be seen as part of the "hermetic reaction" to Theosophy in late-Victorian occultism.[43] It was

[38] For these events, cf. Sutin, *Do What Thou Wilt*, 52-54; cf. Kaczynski, *Perdurabo*, 52-53.

[39] With the most modest estimate, Crowley's inheritance gave him a "historic standard of living" equal to £ 3,540,000 in today's society. As before, figure has been calculated using measuringworth.com.

[40] See Kaczynski, *Perdurabo*, 53-55.

[41] Mathers had translated this ritual instruction from manuscripts in the Bibliothéque de l'Arsenal and published it in 1898. See Mathers, ed., *The Book of the Sacred Magic of Abramelin the Mage*. On the manuscript sources, the translation, and the criticism, see Owen Davis, *Grimoires*, 180-183.

[42] Kaczynski, *Perdurabo*, 55.

[43] Again, cf. Godwin, *The Theosophical Enlightenment*, 333-362; Tillett, 'Modern Western Magic and Theosophy', 28-29. The historical standard work on this order remains Ellic Howe, *Magicians of the*

founded by a small coterie of London-based Freemasons and occultists, most of whom had possessed dual memberships in such esoteric organisations as the Theosophical Society, the Rosicrucian masonic group Societas Rosicruciana in Anglia (SRIA), and Anna Kingsford's Hermetic Society. This was true for the two key founders, the coroner William Wynn Westcott (1848–1925) and the abovementioned MacGregor Mathers (1854–1918). The circumstances surrounding the Order's foundation, and particularly its claim to an "authentic" Rosicrucian lineage through obscure secret chiefs in Germany, has been the matter of much dispute, and I will not repeat the story here.[44] As far as its occult teachings are concerned, the Golden Dawn had a distinct focus on training its candidates in the actual *practice* of ritual magic. This was something of a novelty. While there were certain earlier examples of groups in which magic had been taught and practiced, the Golden Dawn was unique both in its social structure, and its innovative fusion of magic, ceremony, and personal spiritual development.[45] The Theosophical Society, on its part, had discouraged or directly prohibited the practical use of magic altogether.[46]

The Golden Dawn was divided into two sections, one "Outer" and one "Inner": through the five grades of the Outer order the candidate was gradually taught the theoretical aspects of the Golden Dawn's magical system, while it was only in the Inner order that the actual *practice* of magic was taught.[47] Crowley, having received some prior tutoring by Jones and Baker and devoured all the material given him, appears to have been disappointed with the first so-called "Knowledge Lectures" he received in the

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Golden Dawn. For concise overviews, see especially Robert A. Gilbert, 'The Hermetic Order of the Golden Dawn'; Asprem, 'The Golden Dawn and the O.T.O.'.

[44] For a recent discussion, drawing on entirely new evidence, see Christopher McIntosh, '"Fräulein Sprengel" and the Origins of the Golden Dawn'.

[45] An immediate precursor is found in the Hermetic Brotherhood of Luxor, but this society appears to have existed as a correspondence order only: members received instructions by mail, and never met physically as a group. An earlier example can be found in Martinès de Pasqually's (1727–1774) 18th century Order of Élus Coëns, which had a focus on practical theurgy and angel magic, but on the whole, it must be said that 19th century occultists tended to view the teaching and practice of magic as a private affair. See Asprem, 'The Golden Dawn and the O.T.O.'. See also Godwin, Christian Chanel, and John Patrick Deveney (eds.), *The Hermetic Brotherhood of Luxor*.

[46] Tillett, 'Modern Western Magic and Theosophy'.

[47] For a description and discussion of the Golden Dawn's initiatory system, and the place of magic in it – both theoretical and practical – see Asprem, *Arguing with Angels*, 49-54, 57-68.

Golden Dawn. The first lectures asked the student to memorise Hebrew letters, the sephirot of the kabbalistic "tree of life", alchemical and astrological symbolism, and other basic components of esoteric semiotics.[48] If the formal programme of the order left him bored, Crowley nevertheless found something valuable when he was introduced to another initiate, Allan Bennett (1872-1923). Bennett, who would later be instrumental in bringing Buddhism to Britain, was an accomplished magician in the Golden Dawn system, and possessed personal notes of all the order's teachings.[49] Having been convinced to share Crowley's flat, Bennett became another important teacher and accomplice in magic for the young aspirant.[50]

With such private tutelage Crowley could advance quickly through the order's grades, and less than two years after his first admission he was knocking on the gates to the Inner order. His application to proceed was, however, dismissed: Crowley was deemed unfit on the suspicion of "sex intemperance".[51] Stunned by the decision, Crowley headed to Paris, where Mathers was now residing. Mathers, who had been in conflict with the adepts in London for a while, personally initiated Crowley to the grade they had denied him. Crowley was thereby made part of political intrigues that were about to lead the order into a schism – on Mathers' command, he went to London in the early winter of 1900 in an attempt to win the rebelling London group back into. The plot failed badly, however: as a result, the rebels declared Crowley's Second Order initiation void, expelled Mathers from the Golden Dawn, and resumed business independently. A series of other conflicts soon ensued, and the order finally dissolved in 1903.[52]

Leaving a disintegrating Golden Dawn behind, Crowley made use of his inheritance to leave Britain and travel the world, visiting places such as Mexico, Japan, Ceylon, India, Burma, and Egypt. He claimed to study Sufism and Arabic with an unnamed sheik in Cairo; in Ceylon, he visited Bennett, who had now moved to a better climate for health reasons, but also set himself up as a yogi in the tradition of Theravada

[48] Kaczynski, *Perdurabo*, 60-61; cf. Asprem, 'The Golden Dawn and the O.T.O.'. The knowledge lectures were published by Israel Regardie in the 1930s, and are available in volume 1 of his *Golden Dawn*.

[49] Not much work has been done on Bennett, but see John L. Crow, *The White Knight in the Yellow Robe*.

[50] Kaczynski, *Perdurabo*, 63-64.

[51] Ibid., 70-71.

[52] Cf. Asprem, 'The Golden Dawn and the O.T.O.'.

Buddhism.[53] The most significant event of these years of travel and adventure was, however, the "reception" in 1904 of *Liber Legis*, or *The Book of the Law*, while honeymooning in Cairo with his first wife, Rose Edith Crowley (née Kelly). This text would become the foundation document of Crowley's new religion, Thelema, proclaiming a new "dispensation", as it were, in the form of a new law for humanity in a new "aeon".

The details of this reception have been described thoroughly elsewhere, and need not concern us here.[54] Through a series of procedures involving the Egyptian god Horus allegedly speaking through Crowley's wife, Rose, and a mysterious entity by the name of Aiwass dictating *The Book of the Law* to Crowley in three consecutive days, the spring equinox of 1904 was revealed to be "the Equinox of the Gods", the moment in time where the previous "aeon" was to be replaced by a new one. More specifically, Osiris' 2,000 years old reign came to an end at the arrival of Horus' aeon, the aeon of "the Child". In Crowley's own interpretation of the event, he was now to establish contact with the "Secret Chiefs", the discarnate intelligences who were secretly ruling the Golden Dawn beyond its terrestrial leadership. Despite their previous brief alliance, Crowley had fallen out with Mathers, who retained his claim to leadership of the Order in Paris. Conveniently, higher powers were now calling upon Crowley to device new magical formulae and rituals suited for the New Aeon, and device plans to destroy the old order once and for all.[55] "Receiving" the three chapters of *The Book of the Law* between April 8 and April 10, Crowley became the prophet of the New Aeon of Horus, and the founder of a new religious movement, Thelema.

Crowley's vision of Thelema as a complete religious and magical philosophy took shape and solidified only several years after the unusual events in Cairo in the spring of 1904. Eventually, however, a whole system would emerge in which magic played a central role, as a form of religious practice, and as a way to achieve higher knowledge. Crowley's Thelemic transformation of magic involved two other aspects as well: magic was to be brought into harmony with a strictly scientific methodology, and its practices

[53] Sutin, *Do What Thou Wilt*, 80-117.

[54] See e.g. ibid., 117-147. For Crowley's own account and interpretations of the event, see Crowley, *Confessions*, 382-400; Crowley et al., *Magick*, 403-444.

[55] Sutin, *Do What Thou Wilt*,, 121.

were to be disseminated to the people. In addition, the Thelemic principles were to be used for a complete transformation of society and the state.[56]

What were the basic tenets of Thelema? The name is Greek for "will", and Thelema was first of all construed as a religion of radical individualism. Its famous dictum, found in the *Book of the Law*, is 'Do What Thou Wilt', but one should be quick to point out that this was not meant as a license for hedonism. Rather, Crowley's commentaries emphasised that the law implied the strictest possible discipline, since Thelemites are bound to discover their single "True Will", and follow this unconditionally.[57] The True Will is said to transcend the subject's ordinary limitations for knowledge and self-knowledge, and magic is invoked as a tool for reaching this absolute knowledge of self. The magical procedure that leads to knowledge of the True Will is variously referred to in alchemical terms as "the Great Work", or in a more mystical vein as the attainment of the "knowledge and conversation of the Holy Guardian Angel". Although various procedures were held possible, Crowley's preferred one was based on the Abramelin grimoire from which the term Holy Guardian Angel was taken.[58]

Attainment of the knowledge and conversation of the Holy Guardian Angel, Crowley wrote,

> is the essential Work of every man; none other ranks with it either for personal progress or for power to help one's fellows. This unachieved, man is no more than the unhappiest and blindest of animals. He is conscious of his own incomprehensible calamity, and clumsily incapable of repairing it. Achieved, he is no less than the co-heir of Gods, a Lord of Light. He is conscious of his own consecrated course, and confidently ready to run it.[59]

Crowley's take on magic clearly springs out of his Golden Dawn training, which also had a focus on attaining higher knowledge and personal transformation. With Thelema, however, this quest becomes a religion in its own right, complete with a new ethics and freed from a traditional Christian framework.

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[56] See especially Crowley, 'The Scientific Solution of the Problem of Government'.

[57] E.g. Crowley, 'Liber II'.

[58] See Mathers, ed., *The Book of the Sacred Magic of Abramelin the Mage*.

[59] Crowley, *Magick*, 494.

Institutionally, Crowley's new synthesis was embedded in two different structures. In 1907 he founded his own magical order together with George Cecil Jones, the A∴A∴ (*Astron Argon*), designed to take over the mandate of the Golden Dawn. The order went public in 1909 with the first edition of a new occult periodical, *The Equinox*. The programme that was launched by the new order and its journal was entitled "Scientific Illuminism". Its motto was 'the Method of Science – the Aim of Religion', reflecting Crowley's insistence that magic had to be revised in order to conform to the standards of science rather than the "superstition" of earlier aeons.[60] The articles, essays, and rituals that were subsequently published in *The Equinox* attempted to set magic on a scientific footing, giving examples of how procedures could be modified to accommodate scientific methods. In these publications and in other material related to it, a curious project takes shape, attempting to bring the quest for higher knowledge under the controlling strictures of reason. We shall have more to say about this later.

In the years leading up to the Great War, Crowley launched a campaign to spread Thelema to all branches of society, hoping to establish it also as a *political* force. For this goal, a secretive magical society such as the A∴A∴ was not sufficient. Instead, Crowley availed himself of his newly acquired leading position in the German Neo-Templar group, Ordo Templi Orientis (O.T.O.).[61] The early history of this order is complicated and contested, but it is connected with the many Masonic activities of the German occultist, political activist and journalist Theodor Reuss (1855–1923).[62] Here we should briefly mention that Reuss, who came to know Crowley and appointed him to lead the O.T.O.'s activities in Great Britain in 1912, was also one of Rudolf Steiner's contacts in the Berlin occult scene. In fact, some rumours of Steiner being a member of the O.T.O. have their origin in this friendship.[63] Steiner, who during the first decade of the 20th century took a deep interest in Masonic traditions, did run a lodge going by the name *Mysteria Maxima Aeterna*, which seems to have been based on charters given to him by

[60] Crowley, 'Editorial', 2. For a thorough discussion of the meaning of science in the context of Crowley and the A∴A∴'s "Scientific Illuminism", see Asprem, 'Magic Naturalized?'.

[61] For a concise overview of these events, see Asprem, 'The Golden Dawn and the O.T.O.'; cf. Pasi, 'Ordo Templi Orientis'.

[62] For a recent study of this murky history, see Kaczynski, *Forgotten Templars*.

[63] See e.g. Daniel van Egmond, 'Western Esoteric Schools in the Late Nineteenth and Early Twentieth Centuries', 337-340.

Reuss – possibly for the 'Order of Oriental Templars' that Reuss had mentioned in his journal, *Oriflamme*, in 1906.[64] It would at any rate be strongly misleading to characterise Steiner as an O.T.O. member, indicating by that a link between Steiner and Crowley. There was no overarching organisational structure for such an order in existence until Crowley was appointed by Reuss to revise the rituals, and build up a workable organisation.[65] This task was carried out by Crowley between 1910 and 1912. In this period Crowley rewrote the O.T.O.'s rituals and doctrine, streamlining the system of initiation, and making the order fully operable for practical work. However, Crowley also seized this opportunity to thoroughly "Thelemise" the order, making it into a practically oriented vessel for spreading his radical social and religious vision. In 1923, Crowley succeeded Reuss as international leader of the O.T.O. Emphasis was soon put on the order's role in promulgating the "Law of Thelema", and in working as a political avant-garde for the new Thelemic world order.[66] The campaign failed badly, however, and Crowley left a largely dysfunctional and splintered order when he died in 1947.[67]

2 Comparative Gnosis:
Geheimwissenschaft versus Scientific Illuminism

The biographical sketches of Steiner and Crowley above portray two men coming out of different social, cultural, and intellectual backgrounds, getting involved with different strands of modern esoteric thought at different stages in their lives. They shared a rebellious attitude, however, and eventually both became reformers of the esoteric "schools" they had entered into. In this section we shall have a closer look at what these two occultist reformers had to say about higher knowledge, amounting to a comparison of two esoteric epistemologies. I will start by introducing Steiner's perspective, before moving on to Crowley's. For each author, I begin by clarifying the selection of sources, placing them in context of the biographies that have been drawn up above. Following

[64] Cf. Zander, *Rudolf Steiner*, 258-259; idem, *Anthroposophie in Deutschland*, vol. 2, 986-987.

[65] Cf. Pasi, 'Ordo Templi Orientis'.

[66] The essence of Crowley's views on the Order in this respect was published already in 1919, in the so-called "Blue Equinox", being the first issue of the third volume of *The Equinox*.

[67] The best studies of the O.T.O.'s institutional legacy – a largely under-researched field – are Martin P. Starr, *The Unknown God*; idem, 'Chaos from Order'.

this, three points will be considered: First, I will look at the *goal* or broader *function* attributed to higher knowledge; secondly, the *ontologies* or *worldviews* that makes higher knowledge possible for each author; finally, I approach the specific *epistemological* questions that concern how knowledge can be obtained, how its status is secured, and how it is managed in practice. While the sections are arranged to introduce these three points in the order mentioned, there is significant interdependence between the themes. This means that in the final sections on epistemology, we will in practice see the complete relation between soteriological, ontological and epistemological aspects of each author's system.

"Occult Science": Steiner's Devotional Road to Higher Knowledge

Steiner's perspective on higher knowledge is primarily laid out in the para-Theosophical works published for the first time in the journal *Lucifer-Gnosis* between 1904 and 1908. Foremost among these is the series of articles that would eventually become the book *Wie erlangt man Erkenntnisse die Höheren Welten*. This book is the most focused work of "esoteric epistemology" we find in Steiner's oeuvre. A brief note on the work's history is, however, in order, since it went through several incarnations before reaching its current canonised form.[68] It first appeared as essays in the early years of *Lucifer-Gnosis*, from 1904 to 1905 (issues 13-28), before it was published in two separate book volumes in the period 1908-1909. These books were immediately translated into English as *The Way of Initiation: How to Attain Knowledge of the Higher Worlds* (1908), and *Initiation and Its Results* (1909). The definite edition of the work was published only in 1914, just as war was breaking out in Europe and after Steiner had broken away from Theosophy and established the Anthroposophical Society. An appendix was added to a later 1918 edition. I have deemed it best to give priority to the later, revised versions, as we are interested above all in Steiner's own project rather than in the slow procedure through which he was distancing himself from Theosophy.[69] Nevertheless, I will also make some use of his older work to illustrate specific points, particularly the book on Theosophy, which in fact has much overlap with *Wie erlangt man Erkenntnisse*. References to *Aus*

[68] Cf. Zander, *Anthroposophie in Deutschland*, vol.1, 580-615.

[69] Steiner, *Theosophy: An Introduction to the Supersensible Knowledge of the World and the Destination of Man* (English edition 1910; first German edition 1904).

der Akasha-Chronik (which first appeared in *Lucifer-Gnosis* between 1904 and 1908, and only published as a book posthumously, in 1939), and *Die Geheimwissenschaft im Umriss* (first edition 1909) will also be brought in, to illustrate aspects of Steiner's worldview and to provide concrete examples of higher knowledge claims.

* * *

In esoteric discourses, higher knowledge has typically been connected with soteriological projects. Steiner is no exception: gaining "supersensible knowledge" is, for him, intimately connected with the attainment of *freedom*. As we saw in the biographical section, an emphasis on the tension between individual freedom and natural law was a central philosophical problem that Steiner had been grappling with in his 1882 PhD dissertation, *Wahrheit und Wissenschaft*, and in the key philosophical work that followed it, *Die Philosophie der Freiheit* (1894). The problem was largely derived from the German idealist tradition, and Steiner had tried to solve it through an engagement with the works of Fichte, Schopenhauer, and Nietzsche.[70] After discovering occultism, however, Steiner began exploring new avenues for solving the problem of freedom, knowledge, and natural law. In his book on Theosophy, for example, Steiner teaches that higher perceptions help the individual to free him-/herself from "external" appearances, pressures, and constraints, by cultivating a focus on one's "imperishable" and "eternal" inner "I".[71] Esoteric knowledge of the self becomes the road to total freedom, because 'freedom is action from out of one's inner being. And only he may act from out of his inner being who draws his motives from the Eternal'.[72] Connected to this is an essentially Platonic moral theory, for Steiner continues to stress that supersensible vision makes it possible to see eternal "laws" of right conduct, compared explicitly to the laws of mathematics. When one is able to distinguish the eternal and true laws from arbitrary passions and urges arising in one's body with relation to external things, then the initiate can truly choose to follow higher principles.[73] Following such higher principles is the only true freedom.

[70] For an overview of the philosophical problem of freedom in the context of German idealism, see especially Beiser, *German Idealism*, 273-306.

[71] Steiner, *Theosophy*, 217.

[72] Ibid., 221.

[73] Ibid., 212-222,

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Steiner's view of higher knowledge is based on a worldview heavily influenced by Theosophy. A partition of the world into material, etheric, and astral is especially important in this regard. Steiner wrote on the subject in *Theosophy*, and the ontological and anthropological parts of *Knowledge of the Higher Worlds* are essentially borrowed from this earlier booklet.[74] We have already encountered the essentials of this ontology in our discussion of the ether metaphysics of Oliver Lodge and in the worldviews of Besant and Leadbeater in previous chapters. The two latter figures were no doubt profound influences on Steiner, and his ideas clearly belong to the same Theosophical family. According to this ontology, the immediate material world is coextensive with a finer reality of ether, and an even subtler astral plane. Beyond this levelled reality there is a higher, spiritual world. The different layers of reality are used to explain various aspects of nature as we generally know it. As in Theosophy, Steiner connects the ether with animating life forces, typical of plants and all higher organisms, while the astral plane is a plane of pure emotion, memory, and intellect. Plants thus possess ether bodies, which mediate the life forces and enable them to grow and reproduce, while animals and humans possess astral bodies in addition, which are the prerequisite for the cognitive functions that mankind has in common with the animals. On top of these bodies, human beings have yet another body, which Steiner calls the "higher I" ('höhere Ich'). This is identified as the essential and imperishable soul, which makes it possible for humans to be fully and consciously active in the higher worlds.

As seen in Theosophy, and in Lodge's theories of extrasensory perception, it is through these subtle bodies that man has a potential of achieving higher knowledge.[75] Gaining such knowledge is therefore first of all a question of *integration* and *awakening* of the subtler bodies: one first has to become aware of one's higher bodies, and then develop and connect them to the normal functions of the physical body. It should be stressed that these parallel bodies are seen to exist on a *continuum* – there is no strict or absolute separation between the material, the astral, and the etheric, as the one flows into the other. In a chapter entitled 'The Physical World and Its Connection with the

[74] See especially *Wie erlangt man Erkenntnisse*, 80-110; cf. idem, *Theosophy*.

[75] See e.g. my discussion of the cognitive dimensions of Theosophy's anthropology in Asprem, 'Pondering Imponderables', 155-159.

Soul and Spirit-Lands', Steiner dwells on these ontological connections at some length.[76] One analogy used to illustrate the connection between the worlds is provided by considering the relation between ice and water:

> Even as a piece of ice floating on the water is of the same matter as the surrounding water but stands out from it owing to particular qualities, so are the things of the senses matter of the surrounding soul and spirit worlds; and they stand out from these owing to particular qualities which make them perceptible to the senses. They are, to speak half metaphorically, condensed spirit and soul formations; and the condensation makes it possible for the senses to acquire knowledge of them. In fact, as ice is only a form in which the water exists, so are the objects of the senses only a form in which soul and spirit beings exist. *If one has grasped this, one can also understand that as water can pass over into ice, so the spirit world can pass over into the soul world, and the latter into that of the senses.*[77]

There are real differences between the actual *formation* of spiritual and material things, but they are not different in *essence*. The separation between spiritual and material realities is an epistemological obstacle rather than a real ontological difference. Our ordinary senses are attuned to perceive only one type of forms and qualities (e.g. "ice" in the water), but *in principle* the subtler forms can also be known. The last part of the quote shows how this separation, not being ontologically relevant, departs from the strict "two-world" separation of someone like Swedenborg. In fact, the intimate connection between the worlds is used by Steiner to explain specific features of the material world. The difference between minerals, plants, animals, and human beings, for example, is understood in terms of different degrees of interaction with these higher realms.[78]

There is, in short, an ontological continuity between the different "worlds", and this continuity makes higher forms of knowledge possible. The connection between the levels of reality is also crucial for explaining the inherent *soteriological* system: the higher autonomy and freedom Steiner promises his students is achievable through a process in which the higher bodies take control of the lower ones – ultimately, the inner "I" should be emperor, making the lower bodies its vehicle, and thereby effecting

[76] Steiner, *Theosophy*, 161-177.

[77] Ibid., 162-163. Emphasis added.

[78] Ibid., 164-173.

changes in the material world. Steiner writes how the channelling of higher knowledge to and through the material body is achieved through the *heart*, or more specifically the etheric and astral organs of perception associated with it:

> … all higher spiritual realities must be related to the physical world, and man himself must act as a channel through which they flow into it. It is precisely through the heart organ that the higher ego governs the physical self, making it into its instrument.[79]

Accessing and developing the higher "sense organs" on the etheric and astral level is not *only* a matter of full integration of the human being on all ontological levels. Activating these higher organs also opens up to wholly different worlds, making truly "suprasensible knowledge" possible.[80] The astral plane exists as an independent world, with its own laws and inhabitants, and thus lies there as an unexplored continent, ready to be discovered by the trained "Geheimwissenschaftler". To take only one example, it is on the astral plane that the "akashic records" are stored – the astral memory of everything that has ever lived, and all that has ever happened. Reading in these astral records the initiate could gain knowledge of previous incarnations, and learn about life in long lost civilisations. The concept of the akashic records was developed in this specific form in Leadbeater's *Clairvoyance* (1899), which was a huge influence on Steiner. Steiner's own astral explorations are detailed in *Aus der Akasha-Chronik*, which includes minute details of life on Atlantis and Lemuria, descriptions of their technological aptitude, and accounts of the esoteric evolution of humanity and its various races.[81]

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The ontology sketched above already shows how the constitution of the human body/bodies stands in a relation to higher spheres that makes exalted forms of

[79] Steiner, *Knowledge of the Higher Worlds*, 196; cf. the German version, *Wie erlangt man Erkenntnisse*, 114-115.

[80] Steiner's view, including the role of the heart as an organ for supersensible knowledge, may easily be compared with views prominent in German romantic Mesmerism. Cf. Hanegraaff, *Esotericism and the Academy*, 262-265. See also my discussion of the probable influence of romantic Mesmerism on Blavatsky, Besant, and Leadbeater in the previous chapter.

[81] Steiner, *Aus der Akasha-Chronik*.

knowledge possible. In the appendix added to the 1918 edition of *Knowledge of the Higher Worlds*, Steiner attempted to clarify and defend his path to supersensible knowledge by separating it strictly from the "superstitions" of spiritualists, clairvoyant dreamers, and other 'degenerate practices'.[82] This was no doubt a strategic manoeuvre to distance his teachings from competitors, and to portray himself as more rational, more scientific, and more forward-looking than the rest of the esoteric milieu – a strategy that nearly everyone else was using as well.[83] Nevertheless, there is something to be said in defence of the distinction in Steiner's case, for his view of higher knowledge is clothed in a language that often comes close to that of academic philosophy, and the perspectives taken are more clearly related to philosophical questions that were seriously debated in academic contexts. We have to note Steiner's philosophical background in German idealism, and particularly the reaction to Kant's critical philosophy. To be sure, the answers Steiner eventually found to the philosophical questions of the times were far outside of what mainstream philosophers could ever agree with, but the fact that the problems were similar should not be taken lightly. Significantly, these are problems that haunted post-Kantian philosophy at large: they concern the difficulties of epistemology as conceived after the "Copernican revolution" of Kant's *Critique of Pure Reason*. What are the limits of human inquiry? Where does observation end, and pure metaphysical speculation begin? How legitimate are such speculations? How do we distinguish the pure forms of things from human constructs and projections? On what basis can a legitimate system of morality be built?

All these questions are, as we have seen, implicit in the problem of disenchantment. Steiner's vehemently anti-Kantian answers, informed by a Theosophical ontology, constitute a strong opposition to "disenchanted" positions. In its *theoretical* aspect, Steiner's view of higher knowledge states that it *is* possible to perceive the *noumenal* things-in-themselves, as they really and truly are. This view goes back to Steiner's understanding of Goethe.[84] However, we can also discern an overlap with the contemporary *phenomenological* tradition, particularly in Steiner's continued emphasis on suspending judgment and withdrawing oneself entirely from the process of perception so that the things may appear to the mind "as they truly are". This is

[82] Steiner, *Knowledge of the Higher Worlds*, 260.

[83] Cf. Hammer, *Claiming Knowledge*.

[84] Steiner, *Erkenntnistheorie der Goetheschen Weltanschauung*.

reminiscent of the phenomenological practice of *epoché*, and not too far removed from Edmund Husserl's method.[85] Indeed, Steiner had come to know Franz von Brentano in Vienna, who is typically seen as a founding figure of the phenomenological tradition.[86]

But Steiner's esoteric epistemology also rests on a Theosophical ontology along the lines described above, and it is here that he finally diverges from philosophical positions defended within the academic mainstream. For example, knowledge of the things in themselves is possible to attain, contra Kant, because the physical "things" are merely gross manifestations of objects that exist in purer form in the finer substances of the astral realm. The "phenomenal" appearance of an object is a "condensation of spirit", the "noumenal" object viewed from the angle of the physical senses. Luckily, however, man has other bodies with other senses, which are capable of perceiving "spirit" directly. The essence of things can be grasped directly with thought: 'when man forms thought about things he merely looks up from the sensible form to the spiritual Archetypes of the things'.[87] Thinking of a thing is actually perceiving it in a higher world. By undergoing a certain practical, occult training programme (more on that shortly), the initiate develops and awakens organs of perception that are just as real as the ordinary senses, but lie hidden from physical view. With these organs, it is possible to gain proper knowledge about things-in-themselves. Steiner saw this as a route to gain true knowledge not only about facts, but also the *value* of things in nature. In other words, we are dealing with a kind of knowledge that defies the "intellectual sacrifice": it teaches not only what things look like or how they behave, but also what they are in and of themselves (metaphysics), and how the individual ought to behave towards them (axiology). It is not quite *scientific* knowledge in the usual sense, but Steiner did see it as a form of secure knowledge nevertheless, established by definite methods, and objective in character. Two students of the occult ('Geheimschüler'), on the same level of development, would always see the same astral 'lines and figures' when determining the true nature of a plant or an animal, or the mental state of a human being.[88]

How could such knowledge be achieved in practice? This is the subject of *Wie erlangt man Erkenntnisse die Höheren Welten*, where Steiner describes the training of

[85] See e.g. Husserl, *Cartesian Meditations* (1931).

[86] Zander, *Anthroposophie in Deutschland*, 123, 487; idem, *Rudolf Steiner*, 51.

[87] Steiner, *Theosophy*, 164.

[88] Steiner, *Wie erlangt man Erkenntnisse*, 31.

the occult student from the most mundane and simple exercises, through gradually more complex meditations, to the attainment of full-blown visions and interaction with higher beings in the suprasensible worlds. Throughout this training there is a strong emphasis on disciplining the student's attitude towards knowledge and various traits of character. Steiner emphasises what he calls 'the path of worship' ('Pfad der Verehrung').[89] The right attitude for occult students is one of devotion and awe towards authorities. Persons who have been brought up to respect authorities and not ask critical questions have a clear advantage on the path to occult knowledge, Steiner writes.[90] While this may sound like a call for subjugation and authoritarianism, he is quick to assure his readers that the attitude is *not* a path to 'slavery'. Instead, 'the first childlike reverence for humans later becomes a reverence for *truth* and *knowledge*'.[91] The student of the occult is no longer a child, but yet, an attitude of reverence and veneration is required towards his or her teacher, and, truth be told, to anyone who is considered to have a "genuine" claim to esoteric insights. Steiner illustrates the attitude in *Theosophy*, where he recreates a hypothetical exchange between a student of the occult and his teacher:

> For him who asks, "How can I gain personal knowledge of the higher truths of Theosophy?" the answer must be given, "Begin by making yourself acquainted with what is communicated by others concerning such truths." And should he reply, "I wish to see for myself, I do not wish to know anything about what others have seen," one must answer, "It is in the very assimilating of the communications of others that the first step toward personal knowledge consists." And if he should answer, "Then I am forced to have blind faith to begin with," one can only reply that in regard to something communicated it is not a case of belief or unbelief but merely of an unprejudiced consideration of what one hears. The theosophist never speaks with the intention of awakening blind faith in what he says. He merely says, "I have experienced this in the higher regions of existence, and I narrate these my experiences."[92]

[89] Ibid., 13. Translation of this term is difficult, and alternatives such as "reverence" and "veneration" might in some instances be preferred. The translators of Steiner's work clearly ran into this problem: all the three mentioned terms appear in place of the German "Verehrung" in various contexts. I will be flexible in my choice of terms, but supply references to the German original when relevant.

[90] Ibid.

[91] 'Es wird später die erste kindliche Verehrung gegenüber Menschen zur Verehrung gegenüber *Wahrheit* und *Erkenntnis*.' Ibid., 14.

[92] Steiner, *Theosophy*, 196-197.

The student is nevertheless asked to curtail his criticism: 'Unfounded disbelief is injurious. It works in the recipient as a repelling force. It hinders him from receiving the fructifying thoughts.'[93] While Steiner admits that a culture of criticism has been a formidable force for Western civilisation's technical and material development, he also singles it out as a serious spiritual ailment of the modern world:

> Our civilization tends more toward critical judgment and condemnation than toward devotion and selfless veneration ['Verehrung']. Our children already criticize far more than they worship ['hingebungsvoll verehren']. But every criticism, every adverse judgment passed, disperses the powers of the soul for the attainment of higher knowledge in the same measure that all veneration and reverence ['hingebungsvolle Ehrfurcht'] develops them. In this we do not wish to say anything against our civilization. There is no question here of leveling criticism against it. To this critical faculty, this self-conscious human judgment, this "test all things and hold fast what is best," we owe the greatness of our civilization. Man could never have attained to the science, the industry, the commerce, the rights relationships of our time, had he not applied to all things the standard of his critical judgment. But what we have thereby gained in external culture we have had to pay for with a corresponding loss of higher knowledge of spiritual life.[94]

Criticism is held up against reverence, mirroring the distinction between the "material" and the "spiritual". While criticism has been beneficial to the growth of science, industry, and commerce, an attitude of reverence facilitated by a suspension of critical faculties is required of the student of "occult science". Superficially, this may indeed look like a variety of the intellectual sacrifice: it is by worship (faith) rather than criticism (reason) that knowledge of higher worlds can be achieved. The difference, however, is that also the path of worship can be a "science", and the "truths" acquired by it demand to be counted as knowledge in every way as secure as the knowledge of external facts. At present we should carefully note this ambiguity, before returning to it in the final discussion.

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[93] Ibid., 199.

[94] Steiner, *Knowledge of the Higher Worlds*, 8-9. Compare German original in Steiner, *Wie erlangt man Erkenntnisse*, 15.

Reverence, according to Steiner, is not simply an attitude one must take towards one's teacher. More importantly, it must be *internalised* and applied to the content of one's own mind when treading the path of initiation. As Steiner put it, 'one of the first qualities which everyone wishing to arrive at a personal vision of higher facts has to develop … is the UNRESERVED, UNPREJUDICED, LAYING OF ONESELF OPEN to that which is revealed by human beings or the world external to man'.[95] The attitude should be practiced in the student's daily life, with the aim of rooting out any prejudice or judgement that could possibly limit one's experience. An illustrative expression of what this means for the control and discipline of one's attitudes to the world is the somewhat stoic call for "equanimity": 'A man who loses himself in the pleasure or pain caused by each varying impression cannot tread the path of higher knowledge. He must accept pleasure and pain with EQUANIMITY'.[96] Pleasure and pain are merely subjective, situated, and personal ways of experiencing things and events in the world, and they therefor bar the road to genuine knowledge of things as they truly are. Training is needed to unlearn such subjective and relative emotivism:

> if one is in an environment that excites this or that judgement, one should suppress the judgment and, free from criticism, lay oneself open to impressions. One should allow things and events to speak TO ONESELF rather than speak oneself about them. And one should extend this even to one's thought-world. One should suppress in ONESELF that which prompts this or that thought and allow only what is outside to produce the thoughts. Only when such exercises are carried out with holiest earnestness and perseverance, do they lead to the goal of higher knowledge.[97]

Failing at this, one will end up seeing oneself in the things, rather than the things in themselves: 'By obeying inclination we thrust ourselves, as it were, through the environment instead of laying ourselves open to it and feeling its true worth'.[98] The goal is nothing short of a genuine empathy with objects.

When the student has succeeded in creating a fundamental devotion to pure knowledge, suppressing one's personal judgments and emotional responses, the next

[95] Ibid., *Theosophy*, 200. Capitalisation in original.

[96] Ibid., 206. Capitalisation in original.

[97] Ibid., 202-203. Capitalisation in original.

[98] Ibid., 205.

step for the aspirant is to establish and cultivate a state of inner calm.[99] One should make room for a few moments of "meditation" every day, where one sees the events of the day from "without". In these calm moments, the aspirant should also learn to distinguish the "essential" from the "inessential", and to see one's own responses from an objective point of view. Such exercises will lead to the awakening of one's "higher man" or "inner master", Steiner assures, and result in a state of freedom from outer disturbances and emotional whims.[100] But the establishment of moments of inner calm also opens the way to knowledge of the higher worlds in a stricter sense. In states of "meditation", conducted on the principles mentioned (i.e. suspension of judgment, calm dispassionate perception), the aspirant will start to experience that his thoughts are in fact *alive*; they are not merely his own productions, but reflect higher realities independent of his mind. In this state the student will eventually come to know that there are other, higher "thought-beings" out there, which can be communicated with.[101]

The road to full supersensible knowledge, then, has three steps: *preparation*, *enlightenment*, and *initiation*.[102] The preparatory stage consists of various exercises aimed at transforming "outer" senses, such as seeing and hearing, to "inner" senses for perceiving the higher worlds. An example is the contemplation of certain processes in nature, such as a plant's growth, flowering, deflowering, death and decay. "Astral" patterns will start to emerge when looking at these natural phenomena with the prescribed attitude, and eventually direct perception of the "astral plane" will develop.[103] These are portrayed not as subjective projections, but as real, true, and eternal forms: two students on the same level of development will see the exact same patterns.

Having been properly prepared by adopting the right mental attitude, the next phase is *enlightenment*. Enlightenment is understood as the ability to see clearly in the astral worlds. The student would, for example, learn how to perceive the essential differences between classes of things – again Steiner uses a crystal, a plant, and an animal as his examples. These instill different feelings in the soul, and the aspirant who

[99] Steiner, *Wie erlangt man Erkenntnisse*, 19-26.

[100] Ibid., 24-25.

[101] Ibid., 26.

[102] Ibid., 29-51.

[103] Ibid., 31-32.

works systematically to recognise such differences astrally when encountering objects, will slowly start to develop the perceptual organs for clairvoyance ('Hellseherorgane').[104] Steiner is quite literal about this: real changes occur in the constitution of the student's subtle bodies. Occult training stimulates the growth of the *chakras* or "lotus flowers" that are located in the astral body, and which are connected to various occult powers.[105] The nature, function, and location of these organs of occult perception are entirely in line with those described by Leadbeater and Besant.

The final goal of all this training is to attain *initiation*. When complete lucidity has been achieved, the student is presented with a number of "tests" conducted solely on the higher planes. There are trials by fire, water, and air, representing the different subtle bodies and the personality traits associated with them; finally, he can enter into the 'temple of higher wisdom', where he will receive the 'draught of forgetfulness' and the 'draught of remembrance'.[106] Behind this veiled terminology a picture of initiation emerges in which the student is finally able to leave the physical world behind, while the higher, supersensible worlds are opened up to him. He will now be able to communicate with higher beings, discarnate from material reality. He will attain a universal "remembrance" of everything about his own previous incarnations, and knowledge of all the secret, spiritual forces that have been working on his many lives. He will also be able to perceive the specific destinies of the different nations and races of the world, their particular guiding spirits, and other subtle forces working on them on the material plane. As the student has now moved progressively further away from the ordinary material world, Steiner warns that the biggest threat is succumbing to fantasy and illusions; individuals who are dreamers, fantasy-prone, or superstitious are the least suited for occult study, together with those who lack the required discipline and determination.[107]

This last stage is connected with a very specific encounter in the higher realms: the meeting with the 'Guardian of the Threshold' ('Hüter der Schwelle'). The term is lifted from Edward Bulwer-Lytton's Rosicrucian novel, *Zanoni*, as Steiner himself acknowledges. Bulwer-Lytton had described how magical evocations could call the

[104] Ibid., 37.

[105] Ibid, 80-110.

[106] Ibid., 61-62.

[107] Ibid., 58.

guardian to visible appearance, but Steiner ensures his students that such magical procedures are no longer necessary:

> It is a lower magical process to make the Guardian of the Threshold physically visible also. That was attained by producing a cloud of fine substance, a kind of frankincense resulting from a particular mixture of a number of substances. The developed power of the magician is then able to mould the frankincense into shape, animating it … . Such physical phenomena are no longer necessary for those sufficiently prepared for the higher sight… .[108]

According to Steiner, there are in fact two of these creatures, a "lesser" and a "greater guardian", encountered by the initiate more or less at the same time. The lesser guardian appears to the initiate when the various subtle bodies (astral, etheric, "higher I") have been so highly developed that they start to separate from each other – a process that is connected with certain grave psychological dangers.[109] The greater guardian then appears when the subtle bodies are collectively severed from the *physical* body, now becoming free to roam the higher worlds unhindered. These two entities are described as having a more or less independent existence in the higher realms: 'What is here indicated … must not be understood in the sense of an allegory, but as an experience of the highest possible reality befalling the esoteric student'.[110]

The "lesser guardian" is not *completely* independent of the individual, however, for it has itself been created by the individual's good and bad actions as they have accumulated through countless incarnations. It is this lesser guardian that governs the person's reincarnations, and so to speak enforces the laws of karma. The lesser guardian will generally appear terrible due to the accumulation of bad behaviour through countless incarnations. If the initiate can handle this meeting with the guardian, and pass beyond it, he achieves lucid, disembodied immortality:

> If successful, this meeting with the Guardian results in the student's next physical death being an entirely different event from death as he knew it formerly. He experiences death consciously by laying aside the physical body as one discards a garment that is worn out or perhaps rendered useless through a sudden rent. Thus his physical death is of special

[108] Steiner, *Knowledge of the Higher Worlds*, 237-238

[109] Steiner, *Wie erlangt man Erkenntnisse*, 125-133.

[110] Steiner, *Knowledge of the Higher Worlds*, 238.

> importance only for those living with him, whose perception is still restricted to the world of the senses. For them the student dies; but for himself nothing of importance is changed in his whole environment. The entire supersensible world stood open to him before his death, and it is this same world that now confronts him after death.[111]

Overcoming the lesser guardian means to take full conscious control of one's reincarnation cycle, rising above the laws of karma. From this new vantage point, the initiate also gains knowledge about the way in which various "racial" and "national" spirits have been directing him previously. They will not push him anymore; instead it becomes the initiate's responsibility to 'not only know his own tasks, but … knowingly collaborate in those of his folk, his race'.[112] Put bluntly: since the higher spirits will not take care of one's racial will anymore, the initiate must become a fully self-conscious and dedicated racist.[113]

The *second* Guardian of the Threshold is encountered when the initiate has already taken the first steps into the supersenisble worlds. Contrary to the terrible and frightening first Guardian, the second appears as 'a sublime luminous being whose beauty is difficult to describe in the words of human language'.[114] While the lesser guardian represented the accumulated imperfections of the past, the greater represents the perfections of the future. It guards the path to the higher regions of the supersensible worlds, warning the initiate against going any further before he has used all of his newly won powers to help others in the physical world to achieve what he

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[111] Ibid., 239.

[112] Ibid., 241.

[113] In the sense of dedicating one's actions to manifesting the collective will of one's own race and nation. While the above statement may appear condemning, it is no secret that Steiner's teachings were strongly racist, and became increasingly so during and after the Great War. See e.g. Zander, *Rudolf Steiner*, 68-76, 184-186; Peter Staudenmaier, 'Antroposofi og øko-fascisme' (re-published online in English translation as 'Anthroposophy and Ecofascism'). As Staudenmaier has noted, English-speaking readers have had less opportunity to look at the racist elements of Steiner's work, since later translations published by the Anthroposophical Society have tended to omit passages and sometimes entire chapters that would appear problematic to a contemporary reader. For Steiner's complex and shifting attitudes towards Jews and anti-Semitism, see Staudenmaier, 'Rudolf Steiner and the Jewish Question'. See also Staudenmaier's dissertation on the complex relations between anthroposophy and fascism in Germany and Italy: *Between Occultism and Fascism*.

[114] Steiner, *Knowledge of the Higher Worlds*,, 253.

gained for himself. The promise held out for the future is complete *union* with the second Guardian, but this will only be granted if the initiate first applies himself in every possible way to facilitate the liberation of his fellow humans. It is the initiate's prerogative to ignore the Guardian's plea, and continue with a disembodied existence in the higher realms. However, Steiner warns that by doing this, no union will ever be achieved. Remaining in the supersensible worlds is to follow the "black path", and the initiate who chooses it will only experience spiritual stagnation. Those who follow the "white path" and return to earthly existence to help others will take part in future spiritual evolution, and eventually merge with the perfect being of the greater Guardian.[115] This, then, is the final and ultimate moral choice, awaiting the student of higher knowledge at the end of the road to initiation.

Scientific Illuminism: Crowley's Sceptical Road to Higher Knowledge

Crowley's "Scientific Illuminism" was embedded in the magical order he founded with George Cecil Jones in 1907, the A∴A∴. The main sources for it are found in the journal *The Equinox*, particularly the first volume published in 1909. The editorials, articles, essays, exercises and rituals published there will form the basis of our analysis. However, they must be supplemented by various other texts Crowley produced in order to demonstrate both context and development. Of particular importance are Crowley's key texts on magic and mysticism, collectively known as *Liber ABA* (or *Book Four*), the concise and influential *Magick in Theory and Practice*, and his autobiography, *The Confessions of Aleister Crowley*.[116] Crowley's writings on magical practice are extensive, so a careful selection is necessary. I will focus primarily on material that deal with the

[115] Steiner, *Wie erlangt man Erkenntnisse*, 148.

[116] *Book Four* started as the result of a magical working that took place in 1911 in Switzerland, and was first published in two sections: the first appearing in 1911, the second in 1912. A third part was also begun at that point, bearing the title *Magick in Theory and Practice*. However, completion and publication of this third part was cut short by the First World War and Crowley's departure for America in 1914. It was only finished in 1921, at Crowley's Thelemic "abbey" near Cefalù, Sicily. In the following I will refer to the single-volume edition of all three parts edited by William Breeze and published in 1997: Crowley, Mary Desti, and Leila Waddell, *Magick: Book Four*.

"methodological" aspects of his Scientific Illuminism so that a proper comparison with Steiner's system for obtaining higher knowledge can be made.[117]

* * *

The quest for higher knowledge in Crowley's work is intimately connected with magic, and his new religion, Thelema. As in the case of Steiner, the ultimate goal of achieving higher knowledge is *freedom* – in Crowley's case, the freedom to follow one's "True Will".[118] In the biographical section we saw that knowledge of the True Will could be achieved through various magical procedures, and that the attainment was described as the "Knowledge and Conversation of the Holy Guardian Angel". Crowley would change his opinion on the exact nature of this mysterious entity over the years, but it was always clear that the Holy Guardian Angel could impart superior and deeply personal knowledge to the magician concerning his or her destiny and purpose in life – knowledge, furthermore, which went beyond what the individual could possibly know on its own. Without this knowledge, the magician has no direction; he cannot follow the Thelema's one and only law – 'do what thou wilt' – because he does not *know* the nature of his will. For this reason, all magic performed before knowledge of the Holy Guardian Angel and the True Will has been attained, should be directed towards reaching this knowledge in the future. For example, the magician might want to perform the Abramelin operation, which Crowley considered to be particularly effective, but to do so properly, he will need a ritual space and expensive equipment. Thus, lesser magical operations focused on obtaining the material resources necessary for performing the Abramelin operation will be considered legitimate. Straying *away* from the pursuit of knowledge of the True Will, seeking to satisfy random whims or pleasures instead, Crowley defined as "black magic".[119]

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[117] This means that other aspects are omitted or treated with relative brevity. I will, for example, not go into any detail about the different types of magical practice that were used and synthesised by Crowely, spanning medieval and early-modern grimoires, "Enochian" angel magic, and, importantly, sexual magic. For Crowley's sex magic, see e.g. Hugh Urban, *Magia Sexualis*, 109-139; for his work with the Enochian system, see Asprem, *Arguing with Angels*, 85-102.

[118] I have previously discussed Thelema as an ethical system in Asprem, 'Én Vilje, hinsides godt og ondt'. The function of magical practice as a "way of life" in this ethical system was explored in Asprem, 'Thelema og ritualmagi'.

[119] See e.g. Crowley et al., *Magick*, 275.

Higher knowledge is thus necessary for achieving the goal of self-realisation in Thelema as it was in Steiner's system. This knowledge is obtained through the practice of *magic*. One must first train one's ability to do magic and move about in the higher worlds; when sufficiently advanced, one may invoke the Holy Guardian Angel and achieve higher knowledge of one's purpose in life. Scientific Illuminism, as a specific approach to doing magic, is relevant on all steps of this process. It promises to give the magician the appropriate tools for checking the knowledge achieved, guarding against delusions, and making sure that each step is in fact in the right direction.

* * *

Crowley's *ontological* position was never made entirely clear, and seems to have shifted several times through his career. Generally, we might say that he moved from a strict "ontological naturalism", in which magic was reduced to the brain and religion understood within a completely materialistic framework, through a more "romantic-psychological" interpretation, in the tradition of Myers and James, to a full-blown form of occultist *supernaturalism* in his later years.[120] In a sense, he moved from a "disenchanted" to an "enchanted" position. The "disenchanted" phase of materialistic ontological naturalism is best illustrated by Crowley's introductory essay to *The Goetia*, written in 1900.[121] Here, Crowley presents a completely disenchanted picture of the efficacy of ritual.[122] All phenomena associated with magical ceremonies, including the appearance of demons or angels, and the successful attainment of what is desired, is reduced to a thoroughly naturalistic understanding of psychology. After problematising the distinction between the "real" and the merely "illusory" by arguing, with Herbert Spencer, that both are 'evidence of *some* cause' – i.e. they are both 'phenomena dependent on brain-changes' – Crowley goes on to argue that magic gains its efficacy precisely through a willed manipulation of such lower-level brain-states.[123] The senses of sight, sound, smell, taste, and touch are all willfully and systematically triggered by the paraphernalia of ritual; when all these are combined and reflected upon by the mind,

[120] For an overview of Crowley's trajectory, see especially Pasi, 'Varieties of Magical Experience'.

[121] Crowley, 'The Initiated Interpretation of Ceremonial Magic'.

[122] See Asprem, 'Magic Naturalized?'.

[123] Crowley, 'Initiated Interpretation of Ceremonial Magic', 15-16.

"magic" happens.[124] But this magic is essentially nothing more than a physiological induction of hallucinations, and a stimulation of certain (unspecified) parts of the brain in ways that may be beneficial to the magician. Against this background, Crowley writes that the demonic creatures of the *Goetia* are nothing but 'portions of the human brain', and must not be assumed to have an independent existence as "spiritual" creatures.[125]

Somewhat later, Crowley's positions would switch in the direction of a less reductionistic form of psychologisation. William James' Gifford Lectures, *Varieties of Religious Experience*, were published in 1902, and became a significant influence on Crowley. The book was quoted in the first volume of *The Equinox*, and again in *Book Four*.[126] James' *Varieties* even made it into the "general reading" section of the curriculum for students in the A∴A∴, appearing with the comment 'Valuable as showing the uniformity of mystical attainment'.[127] Crowley appears to have taken three main points from James, serving somewhat different but interconnected purposes. First, James was used as an academic authority for the view that "mystical experiences" are "valid" and meaningful, even if they are in principle reducible to, or at least dependent on, material changes in the brain. This sort of *non-reductive pragmatism* was implied in a lengthy quotation of James prefacing the first installation of the serialised account of Crowley's spiritual biography, 'The Temple of Solomon the King'.[128] The second point Crowley took from James was the concept of religious "genius" – referring to the religious virtuosi who claim extravagant experiences, visions, mystical exaltations, and who may become the founders of new religions. Crowley saw in this concept not only a psychological theory of the rise of religions, but also a "how to"-manual for becoming a genuine prophet. Crowley's system for attaining exalted religious insights, understood partly through the initiation system of the Golden Dawn, and partly in terms of yoga,

[124] Ibid., 16-17.

[125] Ibid., 17.

[126] See Crowley and J. F. C. Fuller, 'The Temple of Solomon the King (Book I)', 139; Crowley et al, *Magick*, 159. Cf. Pasi, 'Varieties of Magical Experience', 130-131, 140-142.

[127] Crowley, 'A∴A∴ Curriculum', 21. This intriguing list was published in *The Equinox* volume 3, in 1919, and includes several other interesting references – such as Kant's *Prolegomena* (described as 'the best introduction to metaphysics'), Huxley's collected *Essays* (described as 'masterpieces of philosophy, as of prose'), David Hume's essays, Herbert Spencer's *First Principles*, and Thomas Paine's *The Age of Reason* (described as being 'Excellent, though elementary, as a corrective to superstition').

[128] Crowley and Fuller, 'The Temple of Solomon the King (Book I)', 139.

was in fact thoroughly based on his understanding of James' concept of genius.[129] The third point Crowley referenced James for was his distinction between "once-born" and "twice-born" religions, as two distinct "psychological types" of religious systems. The first category is characterised by natural religion, a spontaneous and optimistic form of religiosity without much metaphysical depth, no developed theology, and no concept of evil. This is the religious approach of the "healthy-minded", and James counted Walt Whitman, various liberal Christians, and followers of the mind cure movement as exemplifying this psychological type.[130] The second type is by contrast *pessimistic*, has a systematic theology, metaphysics, and a project for overcoming evil. More or less all institutionalised creeds – but especially Protestantism – fall into this latter category, which exemplify the psychological type that James called the "sick soul" (or "morbid-mindedness").[131] Crowley adopts this distinction to distance his own new religion, Thelema, from those of the past: according to Crowley, Thelema joins the spontaneity of nature worship with the metaphysical depth of the great monotheistic religions, and thus possesses a psychological complexity which outshines that of any existing religious system.[132] When connected, these three points taken from James provide a *psychological* discourse for understanding religiosity in general, particularly its experiential dimension, that remains *non-reductive*, *pragmatic*, and ontologically *noncommittal*. It thus promises to save the "genuineness" of religion without falling prey to supernaturalism.[133] Under the influence of James's Gifford Lectures, Crowley can be said to have taken one step away from a materialistic and reductionistic psychology, in the direction of what I have previously called "psychic enchantment".

Eventually, Crowley moved away from this pragmatic position as well, and came to embrace a form of full-blown supernaturalism: the entities spoken of in grimoires and holy books – angels, demons, elementals, djinns, etc. – are real, independent beings. They are *not* psychological projections, "parts of the self", or hallucinations caused by

[129] See especially Crowley et al., *Magick*, 42-44. Cf. Pasi, 'Varieties of Magical Experience', 138-143.

[130] E.g. James, *Varieties of Religious Experience*, 78-126.

[131] Ibid., 127-165.

[132] Crowley et al, *Magick*, 159.

[133] Compare James' first chapter on 'Religion and Neurology', in which he argues that the origin of the religious sentiment/feeling/experience is irrelevant for assessing its *significance*. Significance is rather to be assessed by pragmatic means: what are the *effects* of a certain belief, experience, or practice? James, *Varieties of Religious Experience*, 1-25.

the biochemistry of the brain. As Marco Pasi has convincingly argued, Crowley in fact *had* to adopt this position when he took up his role as prophet of Thelema. The psychological interpretation of genius and the neurophysiological explanation of magical entities were no longer sufficient if he wanted to claim universal validity for the Thelemic revelations – particularly *The Book of the Law*.[134] The source of his revelations had to be independent of the psyche. Even the "Higher Self" would no longer do. In his mature phase, then, there is nothing disenchanted about Crowley's ontology. Magical creatures exist abundantly, and have constant intercourse with the natural world and with human beings. Religious authority is once again established by god-given charisma, and not merely by a psychological experience of "genius".

* * *

While Crowley drifts from ontological naturalism to supernaturalism, it is essential to note that a *methodological* naturalism remains consistently present to the very end. With reference to the naturalism-supernaturalism continuum I introduced in chapter two, Crowley never ends up in the "objectionable supernaturalism" of the theists, but stops somewhere within the range of "open-ended naturalism" (see figure 3). This is a crucial point: realism about independent spirit-beings did *not* mean that strict methods for verifying and testing their activity had to be scrapped. Quite to the contrary, Crowley continued to emphasise the great need of rational inquiry. This criterion was, in fact, the defining mark of Scientific Illuminism. Applying critical controls and tests to magical experience was the very meaning of *The Equinox*'s motto: 'The Method of Science – the Aim of Religion'.

A positive view of scientific methodology is evident from the editorials of the first issues of *The Equinox*. These argue that an appeal to personal *experience* is insufficient for science, and call for exact measurements and quantitative studies:

> We require the employment of a *strictly scientific method*. The mind of the seeker must be unbiased: all prejudice and other sources of error must be perceived as such and extirpated.

[134] Pasi, 'Varieties of Magical Experience', 154-160. This "realistic" understanding of magical entities is present in *Magick in Theory and Practice*, and is still stated clearly in his very last book, *Magick without Tears* (1943; published posthumously in 1954).

> We have therefore devised a Syncretic-Eclectic Method … to attack the Problem, *through exact experiments and not by guesses*.[135]

But Crowley's own good words set aside, how was this "method" implemented in practice? How "scientific" was it really? In the following I will explore these questions through a closer analysis of some of the practical instructions written by Crowley, and intended as official study material for the A∴A∴. Three interconnected aspects have to be explored. First of all, in the attempt to get rid of 'charlatanism' and 'obscurantism',[136] Crowley designed methods to make subjective magical experiences *intersubjectively available*. This was achieved above all by the use of the magical diary, which took the function of a laboratory notebook. Secondly, experience was to be replaced by experiment: magical rituals were to be conducted in such a manner that prediction of results was possible, and these results were to be tested to see if one had succeeded or failed. Third, both *external* and *internal* methods were devised for testing the veracity and validity of knowledge attained through encounters with magical beings. Some of these methods, as we shall see, placed Crowley close to the practices of the SPR. These methods for criticism and "quality control" of supernatural entities and the knowledge obtained from them were to be actively used during occult training. They provided the student with ways to track the progress of his training, and to check against illusions and errors.

While experience is private, experiments are public.[137] The point about experiments is precisely that other experimentalists should be able to judge their validity. Procedures and results must be recorded precisely enough for others to be able to repeat and test them. For this reason, making magical experiences intersubjectively available is a necessary prerequisite of turning magical rituals into experiments. The very first practical manual of Scientific Illuminism published in *The Equinox*, entitled 'Liber Exercitorum' ('Book of Exercises'), illustrates this point. Its first section sets down the rules to be observed in keeping the *magical record* or diary:

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[135] Crowley, 'Editorial (1.2)', 4. My emphasis.

[136] See e.g. Crowley, 'Editorial (1.1)', 2.

[137] Such, at least, is the assumption underlying experimentalism. For a classic historical critique, see Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump*.

> 1. It is absolutely necessary that all experiments should be *recorded in detail* during, or immediately after, their performance.
> 2. It is highly important to note the physical and mental condition of the experimenter or experimenters.
> 3. The time and place of all experiments must be noted; also the state of the weather, and generally *all conditions which might conceivably have any result upon the experiment* either as *adjuvants* to or *causes* of the result, or as inhibiting it, or as *sources of error*. …
> 7. The written record should be *intelligibly prepared* so that others may benefit from its study. …
> 9. The more *scientific the record is, the better*.[138]

The emphasis is on expelling vagueness and valuating clarity. It also expresses a position that is incompatible with the appeal to personal experience that we saw in Steiner. The fact that "sources of error" have to be taken into account, and that the precise procedure of the operation or experiment must be recorded in order that it may be *replicated* and tested by others, are clear examples of this. The understanding is that immediate experiences can be wrong, and that a scientific epistemology must go beyond unverifiable claims. Clearly, we are dealing with a form of knowledge that has more in common with "reason" than with "gnosis". The appeal to "intelligibility" in fact stems from a deep-seated recognition that both the obscurantist styles of writing and the arguments to authority that had been common in magical and occult discourse must be rooted out completely if a new scientific paradigm of magic is to be established. Illustrating what, precisely, is at stake in the difference between clarity and obscurity, Crowley gave the following examples*:*

> 'I concentrated my mind upon a white radiant triangle in whose centre was a shining eye, for 22 minutes and 10 seconds, my attention wandering 45 times' is a scientific and valuable statement. 'I prayed fervently to the Lord for the space of many days' means anything or nothing. Anybody who cares to do so may imitate my experiment and compare his result with mine. In the latter case one would always be wondering what "fervently" meant and who "the Lord" was, and how many days made "many."[139]

[138] Crowley, 'Liber Exercitorum', 25-26. My emphases.

[139] Crowley, 'The Soldier and the Hunchback', 123.

The instructions in 'Liber Exercitorum' give more examples of how clarity and precision should be applied to occult exercises. Being primarily a training manual for aspiring students of Scientific Illuminism, it provides specific exercises in some elementary "occult" techniques. There are exercises in 'physical clairvoyance', the yogic disciplines of *âsana* (positions or postures), *prânâyâma* (control of breath), and *dhâranâ* (control of thought and imagination), and of the general physical aptitude of the student.[140] In all these tests and exercises the careful recording of what, exactly, has been done and what, exactly, happened is emphasised. For physical clairvoyance, the student is instructed to guess tarot cards, and carefully note the number of hits and misses. By making exact quantitative figures it can be estimated on thoroughly scientific grounds whether the results are statistically significant or not. This, of course, follows the same logic as the quantitative paradigm in parapsychology that we have discussed at length elsewhere – although critical parapsychologists would no doubt be quick to object to the lack of proper controls and randomisation in the procedure that Crowley proscribed. For the *prânâyâma* exercise, focused on breathing techniques, Crowley noted that 'various remarkable phenomena will very probably occur', which 'must be carefully analysed and recorded'.[141] In *dhâranâ* exercises, which focus entirely on mental phenomena, it becomes even more important to keep records due to the entirely subjective nature of the results.

While the stress on experimentalism that we find in 'Liber Exercitorum' appears sincere enough, the *effects* produced by the experiments are clearly of a radically different kind than those considered in the physical sciences. The exercises of 'Liber Exercitorum' generally aim at producing certain mental and/or sensual phenomena in the experimenter. By contrast, experiments in physics or chemistry typically aim at withdrawing the influence of the experimenter as far as possible from the experimental procedure. However, experiments in Scientific Illuminism would not be too far removed from experiments in *psychology*. Indeed, one could even argue that the significant role Crowley ascribes to keeping "scientific" records constitutes a response to one of the standard methodological problems in psychology, namely the problem of gaining third-person access to first-person experience. We have previously encountered this problem

[140] Crowley, 'Liber Exercitorum', 26-31.

[141] Ibid., 29.

in the challenges to the introspective method.[142] It was precisely this problem that the behaviourist school of John Watson and others wanted to overcome by abandoning introspection altogether and focusing solely on measurable behaviour. Crowley's approach to magic, which for obvious reasons could not reduce the experience *away*, comes closer to the "experimental introspection" that was common among the structuralists and functionalists, beginning with Wilhelm Wundt's work in the 1870s.[143] However this may be, the important point for us to note is that Scientific Illuminism takes the scientific problem of introspection seriously, and tries to overcome it by methods that are analogous to those found in academic psychology. [144]

Having established that a method for making subjective experience intersubjectively available is a prerequisite for Scientific Illuminism, we should now consider some concrete methods employed to "test" the veracity and validity of magically induced visionary experiences. The testing of higher knowledge in Scientific Illuminism generally takes two forms: verifying empirical factual claims given by spiritual entities in visions ("external" testing), and applying kabbalistically inspired hermeneutical techniques in order to judge the "spiritual" validity of the visions themselves ("internal" testing). The first category, which could be called *external* testing, is quite straight-forward and reminiscent of methods we have seen in various parapsychological research groups. If a "spirit" makes certain claims about the external world, it immediately stands before the empirical tribunal of truth and should be tested accordingly. In a short note published in *The International* in 1917, Crowley expresses amazement over the lacking will of so many occultists and spiritualists to double-check information from "higher beings" even in cases where it could easily be done. About occultists dabbling with the ouija board, he has this to say: 'Every inanity, every stupidity, every piece of rubbish, is taken not only at its face value, but at an utterly

[142] See chapter five.

[143] See especially Wundt's *Grundzüge der physiologischen Psychologie* (1874), in which the structural study of conscious content through a critical introspective method was spelled out for the first time. See also my discussion in chapter five.

[144] Elsewhere I have noted the similarities between Crowley's insistence on making the private experience publically accessible and open for criticism, and the method of "heterophenomenology" in recent philosophy of mind and cognitive science – a method of doing phenomenology that prioritises the third- rather than the first-person perspective. For the argument, see Asprem, 'Magic Naturalized?', 154-156; for heterophenomenology, see especially Daniel Dennett, *Consciousness Explained*, chapter 4.

exaggerated value. The most appallingly bad poetry will pass for Shelley, if only its authentication be that of the planchette!'[145]

A nice example of practical advice for external testing is found in a letter dated June 19, 1919, where Crowley "corrects" his student Jane Wolfe.[146] Wolfe had claimed to be in contact with an entity named Fee Wah, claiming to be of Chinese origin. Crowley suggested that the entity should therefore be expected to speak some Chinese, and that a test could be run by bringing some classical Chinese literature and ask the spirit to translate. The accuracy of the translation could easily be checked, and judgement passed about the spirit's authenticity. Dedicated parapsychologists would still be able to object that even a positive result in such a test would not establish much – other hypotheses would remain open, including the extrasensory effects of telepathy and clairvoyance.[147] Crowley seems not to have worried much about alternative hypotheses, however. Even though he allowed himself at some occasions to criticise and even mock the gullibility of certain psychical researchers' faith in fraudulent mediums,[148] it has to be said that the external tests he himself advocated for Scientific Illuminism, although novel and radical when compared with the state of the art in practical occultism, lacked the methodological sophistication and rigour found in the best parapsychological literature.

More intriguing and novel are Scientific Illuminism's methods for *internal* testing of the validity of higher knowledge. For this purpose, an appropriated kabbalistic method is applied in order to check both the validity of spirits encountered, and of the consistency of the visionary experiences themselves. Here we should recall the uses of esoteric hermeneutical strategies mentioned in chapter ten: Crowley's approach for

[145] Crowley, 'The Ouija Board: A Note', 319.

[146] Letter to Jane Wolfe, dated June 19, 1919, O.T.O. Archives, Film Roll 1, Letters.

[147] See for example the controversies and difficulties surrounding the "cross-correspondence" research of the SPR in the 1900s and 1910s, discussed in chapter eight.

[148] In particular, Crowley was skeptical of the rehabilitation of Eusapia Palladino by second-generation psychical researchers such as Everard Fielding and Hereward Carrington. Fielding, who was Honorary Secretary of the SPR, had been an early member of Crowley's A∴A∴. As for Carrington, Crowley later came to know him and found himself 'unable to attach serious credit to anything he said'. He was able to attend a séance with Palladino himself in Naples in 1912, finding further evidence of fraud. See Crowley, *Confessions*, 680-685. Cf. Asprem, 'Lettlurte vitenskapsmenn, skeptisk okkultist' ["Credulous scientists, sceptical occultist"].

internal testing represents an attempt to reform such methods to make them usable for *falsifying* data received through visions. Already in the Golden Dawn system of magic, kabbalistic concepts had been reinterpreted and given new functions to fit their syncretistic occult system.[149] There, the Tree of Life with the ten *sephirot* and the twenty-two letters of the Hebrew alphabet were utilised as the foundation for an elaborate system of correspondences, to which all other systems could be subsumed. In a ritual setting, this whole body of correspondences was employed in order to invoke certain forces and "intelligences" that the symbols were thought to represent. One discipline in which this was deployed was astral travel, where the symbols were deployed to "guide" the magician to places on the astral plane, in search of arcane knowledge. Crowley adopted the basic framework of this practice, but adapted the use of kabbalah to get an elaborate system for *testing* and *criticising* experiences.

As with other occultists, from Eliphas Lévi to Blavatsky, the magicians of the Golden Dawn had worked with an occult cosmology that supposed the existence of a subtle "astral plane", interpenetrating the phenomenal world. It could be reached and interacted with by virtue of a properly cultivated and disciplined use of the magical imagination. The magician would use various symbolic stimuli to "project" oneself (or one's astral body) into locations in the astral spheres that one wanted to visit. Once there, visions of foreign landscapes and strange creatures would appear. Interacting with these astral creatures, which could range from lower spirits and fellow magicians, to higher angels and "secret chiefs", the magician would use his or her knowledge of the symbolic systems provided by the reformed kabbalah.[150] The kabbalah thus worked as a secret grammar of the higher worlds.

In Crowley's Scientific Illuminism, the kabbalistic system used by the Golden Dawn was expanded further and put to use in a more elaborate fashion, not only to *induce* visions and navigate and communicate with beings once there, as in the Golden Dawn, but also to *test* the visions in hindsight. In 1909, the same year as Scientific Illuminism was first announced in *The Equinox*, Crowley published a highly

[149] See Asprem, '*Kabbalah Recreata*'.

[150] For examples of this kind of astral exploration in the Golden Dawn, see e.g. the reports and testimonies published in Francis King (ed.), *Astral Projection, Ritual Magic, and Alchemy*. For one expert report, see Moina Mathers, 'Of Scrying and Travelling in the Spirit-Vision'.

idiosyncratic work on Kabbalah entitled *Liber 777*.[151] This work is really an extensive diagram of some 200 columns, intended to show the "hidden connection" between Roman gods, Taoist concepts, Buddhist meditation practices, concepts from Christian mysticism, magical stones, fragrances, and so on – all subsumed to the framework of the kabbalistic Tree of Life.[152] A couple of years later another innovative Kabbalistic compendium was published as a supplement to *The Equinox*.[153] Entitled *Sepher Sephirot*, this book is a sort of dictionary of Hebrew words arranged on a *numeric* basis. Exploiting the alphanumeric structure of the Hebrew language (i.e., each letter also has a numerical value) it becomes possible to calculate the numerical sum of words. The esoteric hermeneutical technique based upon this feature is known as *gematria*: by adding up words, the esoteric scholar "uncovers" hidden structures and correspondences whenever two words produce the same sum. Traditionally, this tool has been used to expand the possibilities of interpretation of scripture beyond the usual range of semantic meanings and syntactical structures. In Scientific Illuminism, gematria is combined with the correspondences presented in *Liber 777* to form an important tool for *testing* visions and making them falsifiable vis-à-vis an "internal" system of reference.

The system thus has two interconnected uses: first, to guide the construction of rituals for specific purposes; second, to test the consistency of the results in light of the established correspondences. In the instruction manual 'Liber O',[154] Crowley gives an example of how this is supposed to work:

> Let us suppose that you wish to obtain knowledge of some obscure science. In [*Liber* 777] column xlv ["Magical powers"], line 12, you will find "Knowledge of Sciences." By now looking up line 12 in the other columns, you will find that the Planet corresponding is Mercury, its number eight, its lineal figures the octagon and octagram, the God who rules that planet Thoth, or in the Hebrew symbolism Tetragrammaton Adonai and Elohim Tzabaoth, its Archangel Raphael, its choir of Angels Beni Elohim, its Intelligence Tiriel, its

[151] For a modern edition, see Crowley, *Liber 777 and Other Qabalistic Writings*.

[152] On the creation of this "book", and relation to similar projects already existing among Golden Dawn members, see Sutin, *Do What Thou Wilt*, 64.

[153] To *The Equinox* 1.8 (1912). For a reprint, see Crowley, *Liber 777 and Other Qabalistic Writings*, part three.

[154] Crowley, 'Liber O', 13-30.

> Spirit Taphtartharath, its colours Orange (for Mercury is the Sphere of the Sephira Hod, 8) Yellow, Purple, Grey and Indigo ...
> You would then prepare your Place of Working accordingly.[155]

What then of the testing of visionary experiences – the "effect", as it were, of the experiment? The Golden Dawn already emphasised the role of testing visions *during* the experience: to make sure that what the magician sees is a result of "real magic", and not simply a product of fantasy and illusion, certain symbols were employed to "banish" fake apparitions.[156] Crowley takes this practice a step further, again emphasising the use of the magical record as a way to make subjective experience intersubjectively available and testable:

> Apart from the regular tests – made at the time – of the integrity of any spirit, the Magician *must make a careful record of every vision*, omitting no detail; he must then make sure that it *tallies in every point* with the correspondences in *Book 777* and in "Liber D" [*Sepher Sephirot*]. Should he find (for instance) that, having invoked Mercury, his vision contains names whose numbers [by *gematria*] are Martial, or elements proper to Pisces, let him set himself most earnestly to discover the *source of error*, to correct it, and to prevent its recurrence.[157]

The occult correspondences set forth in the tables of *Liber 777* and in the numerical value of words and names listed in *Sepher Sephirot* are utilised for checking or verifying the authenticity of the spirits invoked, in hindsight of the visionary experience. The experience itself can never be the final word; there is still the possibility that, when going through the records and double-checking the names and symbolic correspondences found in the visions, one will discover that one had fallen victim to self-deception (e.g., if the names or symbols do not show any meaningful pattern), or been tricked by a "foul spirit" intruding with the operation (if the correspondences follow a *wrong* pattern, for instance signalling Mars when one had invoked Mercury).

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[155] Ibid., 15-6.

[156] Cf. Moina Mathers, 'Of Scrying and Travelling in the Spirit-Vision'.

[157] Crowley, 'Notes for an Astral Atlas', 505. Emphases added. This piece was written in 1921 at the "Abbey of Thelema" in Sicily, and is thus somewhat later than the first programmatic statements of Scientific Illuminism.

Only by discovering such "errors" is progress in occult knowledge possible. Kabbalistic hermeneutics has been transformed – at least in principle – from being a tool that opens up for expansive interpretations of a text, into a "scientific" *formalism* that (so it is claimed) makes it possible to assess the validity of magical experiences.

As Crowley wrote in his autobiography, the kabbalah had provided him with a method that was totally compatible with 'the agnosticism of Huxley': the method it posited was "scientific" in the sense that it was concerned with the sceptical *criticism of "facts*", arrived at by empirical methods.[158] Furthermore, Crowley saw in Scientific Illuminism a way to overcome 'the historic claim of mystics' that their experiences were *ineffable*. He insisted that he found the claim of inherently "inexpressible" ideas repugnant, because of its 'confession of incompetence and its denial of the continuity of nature'.[159] To overcome this problem, he

> subsequently developed a complete system, based on the Cabbala, by which any expression may be rendered cognizable through the language of intellect, exactly as mathematicians have done: exactly, too, as they have been obliged to recognize the existence of a new logic. I found it necessary to create a new code of the laws of thought.[160]

This 'new code of the laws of thought' made it possible to overcome the problems of otherwise inexpressible and subjective "gnosis", and to expand the limits of "reason" into the higher worlds.

3 On Reverence, Scepticism, and Reason Unbound: Concluding Comparisons

Between Reverence and Scepticism: Contextual Factors

I have strived to make parallels and differences between Steiner's and Crowley's systems of higher knowledge appear as clearly as possible through the above presentation, but they must now be addressed directly. Steiner and Crowley share a soteriological understanding of higher knowledge in which the acquisition of "gnosis" is

[158] Crowley, *Confessions*, 511.

[159] Ibid., 511-2.

[160] Ibid., 512.

necessary for attaining salvation. In fact, they even understand "salvation" in roughly comparable terms, as a radical, individual *freedom* connected to a "higher I" or a "True Will". Higher knowledge is necessary in order to distinguish the course of the higher self from the base emotions and random instincts of the physical body; only through attaining knowledge of one's hidden, higher self, is true autonomy possible. External spiritual beings have a role to play in both of these systems. For Crowley, everything hinges on attaining contact and conversation with one's Holy Guardian Angel. In Steiner's system, the initiate will encounter the lesser and greater Guardians of the Threshold, and must deal successfully with these in order to achieve the ultimate goal. We should emphasise that both Steiner's guardians and Crowley's angel are described as *independent* beings that are *not* simply reducible to a "higher" or "hidden" part of the personality, even though they are intricately connected with such concepts. They remain distinctly "supernatural" entities, even though they can be known and communed with in this life.

This aspect already foreshadows certain similarities in terms of ontology. While we should be careful not to generalise too much, both authors seem to accept a multi-tiered view of reality where the "natural" and the "supernatural" flow into each other, and various "spiritual" planes are accessible from the "material". The spiritual intervenes in the physical: causal chains exist that link the higher worlds to the lower ones, making it possible for the spiritual to influence and cause changes in the material. Both occultists thus expound worldviews that are in some sense "enchanted". Nature is not strictly separated from "higher realities"; both metaphysical knowledge and knowledge of how to act and what to value can be achieved without altogether sacrificing one's intellect.

More substantial differences between the two occultists appear once we take a detailed look at the specifically *epistemological* dimension of higher knowledge: how can it be obtained in practice? It has to be said that there are similarities even here, especially in that both Steiner and Crowley appear to view higher knowledge primarily as an expansion of *reason* rather than as unverifiable and incommunicable "gnosis". I will have more to say about this shortly, but first we must note that the ways of *achieving* this higher knowledge are notably different for the two authors, verging on the incompatible. While Steiner recommends a path of *reverence*, Crowley advocates systematic *scepticism*. Steiner holds doubt and criticism to be grave spiritual dangers, a

certain way to "materialism" and stagnation in occult work. Crowley advocates those very same traits as necessary requirements for avoiding delusion and ensuring true knowledge. Steiner's demand of "laying oneself open", bracketing criticism, and accepting the authority of higher visions, is deemed a dangerous practice by Crowley, jeopardising the student's integrity as well as his progress.

What are we to make of these parallels and differences? What do they tell us about the status of higher knowledge in modern esoteric discourse, and what about the relation of esotericism to the problem of disenchantment? First of all they indicate that it has been possible for esoteric discourses to co-opt quite different philosophical traditions and epistemological positions in the pursuit of similar ends. Steiner's attempt to get rid of any bias, suspend all critical judgments, and accept impressions directly as they manifest, must be understood in context of his philosophical anti-Kantianism. Steiner's particular mix of philosophy and esotericism is rather unsurprising in the light of this cultural context, even predictable: the German traditions of idealism and romantic *Naturphilosophie* were riddled with anti-Kantians, some of which explicitly claimed to stand in a trans-historical lineage of an esoteric perennial philosophy.[161] Crowley the autodidact, predictable in his eclecticism but not much else, by contrast advocated higher knowledge through magical invocation while urging his disciples to read Kant, Hume, Huxley, Paine – the very same authorities of the Enlightenment establishment that Steiner had come to reject. The source of Crowley's obsession with being "scientific" and "methodical" reveals itself in his references to the heroes of late-Victorian naturalism: his general approach bears the imprint of the particularly British struggle with the problem of disenchantment that manifested in the agnosticism controversy at the turn of the century.

The contextual comparison can be taken even further. Steiner grew out of an intellectual culture preoccupied with defining the epistemological differences between the natural and the human sciences, and he came to advocate a method for "spiritual science" that is in its principles of conduct *antithetical* to that of "natural science".[162] There is an epistemological break between knowledge of the material world and

[161] See especially the tradition of German romantic *Naturphilosophie* in the footsteps of Mesmer: Hanegraaff, *Esotericism and the Academy*, 260-277. See also the example of Franz von Baader: Faivre, *Access to Western Esotericism*, 113-146, 201-274. Cf. Glenn Magee, *Hegel and the Hermetic Tradition*.

[162] See e.g. Charles R. Bambach, *Heidegger, Dilthey, and the Crisis of Historicism*.

knowledge of the higher spheres, although both are appropriately called "sciences", and both lead to true knowledge. This is precisely the kind of break that in more disenchanted corners of philosophy led to the call for an intellectual sacrifice. But in contrast to the neo-Kantianism that informed Weber's thesis, Steiner held that real, exact knowledge is possible not only of the natural world, but of the higher worlds as well. The break only implies that different methods must be used to reach this knowledge – it is just a question of developing the right methodology.

Crowley, by contrast, comes out of a British naturalistic discourse emphasising the *unity* of all the sciences, and the *continuity* between natural, human, social, and even religious knowledge. Following this view, characteristic not only of Huxley and Spencer, but also of the founders of the SPR, the method of science is essentially the same everywhere, and it is the only legitimate path to reliable knowledge. Intriguingly, this naturalistic focus on the unity of knowledge and the superiority of scientific method even manifests in Crowley's take on *hermeneutics*: while Steiner described "occult science" as *Geisteswissenschaft* – following the German struggle to distinguish the humanities from the natural sciences as following uniquely different methodologies – Crowley took the pre-existing hermeneutical aspects of esoteric practice and sought to make them tools for precise scientific demonstration. Thus, remembering my discussion of esoteric hermeneutics in chapter ten, we may say that Crowley adopts hermeneutical discourse not in order to avoid a factual discourse, but to *reform* esoteric hermeneutical tools into a hermeneutics of *suspicion* based on a naturalistic conception of "scientific method". Steiner, in contrast, differentiates between the *critical* method of the exact sciences, and an *empathic* method of reverence and worship needed for occult, spiritual science. This distinction mirrors the separation of the humanities and natural sciences emphasised above all in the German-speaking academy, just as much as Crowley's notion of method mirrors the naturalistic assumptions of the continuity of nature and the unity of the sciences typical of the British intellectual climate of the Victorian and Edwardian periods.

The epistemological differences between Steiner's and Crowley's views of higher knowledge thus *reflect diverging intellectual contexts*. We have already seen these contexts manifest at other levels in this study. Steiner's "Geheimwissenschaft" was a response to the very same epistemological problems that made Weber call for an intellectual sacrifice and predict the disenchantment of the world. The answers Steiner

found were not quite the same as those formulated by a younger generation of scientists in the 1920s; intriguingly, the anti-disenchantment discourse of the scientists we met in chapter four centred on attacking epistemic optimism and the mechanistic worldview that it was based on, while the older occultist *extended* that optimism to apply also to the higher worlds. Steiner found his resources in well-established post-Kantian German idealist philosophy, but also in the new cosmology and epistemology of Theosophy. Crowley, on his side, developed Scientific Illuminism from the naturalistic assumptions that had given rise to psychical research and to some of the new natural theologies in Britain. These currents experienced the problem of disenchantment primarily through the confrontation with *agnosticism*. Following the agnosticism controversy of the late 19th century, however, the intuition of *open-ended* naturalists had been that whatever can be known in matters of religion, spirituality, or ethics, must be known through scientific methods. While some agnostics might have objected that this criterion automatically *excludes* the possibility of any proper knowledge in these fields (as they are assumed unfit for scientific inquiry in the first place), the optimists sought to design new scientific methods specifically for the purpose.

If the first point of our contextual comparison was that very different intellectual resources could be co-opted for similar esoteric purposes, we can now move on to conclude with a second point: esoteric views of higher knowledge do not only *reflect* their contexts, they *stand on a continuum with* broader and more generally accepted intellectual currents. They do not simply constitute exceptional and "backward" *reactions* to a "forward-looking" post-Enlightenment establishment. Rather, they respond to pre-existing tensions and internal differences *in* establishment discourses, concerning the boundaries of knowledge and its attainment, and actively seek support from some of the positions in those discourses. This makes their presumed status as oppositional "rejected knowledge" problematic: the occultists are part of ever-shifting constellations of power and knowledge, facing the same struggles to legitimise themselves as everybody else. In such struggles, everything hinges on making the right connections and securing support from the right sources. Both Steiner and Crowley attempted to find support for some of their views and attitudes within established academic discourse, even while they indulged in knowledge practices that were far removed from the scientific laboratory or the university campus classroom. The point, however, remains that the establishment itself was *pluralistic*: it had room for variations

and divergences on questions relating to the problem of disenchantment. Some of these debates were even central to the still ongoing struggle to define the epistemological boundaries of academic research. When a comparison is extended between countries, the pluralism of the establishment becomes even broader, as the different contextual influences on Crowley and Steiner illustrate.

Reason Unbound

To what extent do the esoteric epistemologies we have considered represent a form of "gnosis"? My tentative answer to this question has been that practices of higher knowledge in modern esoteric discourse typically appear as extensions of reason rather than as gnosis in the technical sense discussed in chapter ten. Higher knowledge is achieved through the use of special faculties and methods, but it is ultimately of a type that can be described to others and double-checked by anyone. It may not be so easy to confirm the knowledge in *practice*, but it is held out as being in *principle* possible. A practical difficulty of confirming claims is, however, nothing special to the esoteric context, but is found in many forms of rational knowledge. An astronaut conducting experiments with gravity on the surface of Mars would, for example, create rational knowledge that could be transmitted back to Earth and understood by anyone. But *strictly speaking* it could only be double-checked, in terms of repeated experiments, by other highly trained Mars-voyaging scientists. Knowledge attained by reading in the "akashic records" would be "rational" claims in exactly this sense; the same goes for knowledge of "ultimate physical atoms" in Theosophy's occult chemistry, or visions of the spirit of Mercury in Crowley's Scientific Illuminism. It takes much occult training to acquire the skills, and most people will forever live their lives ignorant of the existence of the hidden potential of their rationality.

Is a boundlessly extended reason the *only* type of higher knowledge we see in these sources? What, in that case, are the implications for our understanding of modern esotericism? If boundless reason is the final word, then the occultists' refusal to undergo an intellectual sacrifice have not only opened the door to knowledge about higher realms, but also spelled the final end of mystery. The epistemic optimism of disenchantment is fully embraced, with its promise of explaining everything without fear of running into any genuinely inexplicable mysteries now extended to the spheres of metaphysics and axiology. This seems to be the implication of Steiner's knowledge of

the "higher worlds": once the occult cognitive organs have been awakened, nothing can escape the lucid rational mind of the esoteric philosopher. Everything is as clear as day to him: he knows the origin of the universe and the most arcane history of our species; he sees the spiritual forces working on the destiny of races, peoples, nations, and individuals; even future incarnations are under his control. If the "disenchantment of the world" meant the disappearance of incalculable, mysterious forces from nature, then Steiner's occult science promised to dispel the same mystery from the *higher* worlds.

Steiner's unbounded rationalism is, however, only one response to the problem of disenchantment among others, and borrows its ambitions of complete rational knowledge from German idealism. Crowley's system, having borrowed from the sceptical British empiricist tradition, does in fact *not* hold up the promise of total knowledge and universal explanations: it promises higher knowledge of *self*, and ways to access higher worlds and commune with various "praeterhuman" beings, some less trustworthy than others. Scientific Illuminism provides *tools* and *techniques* modelled on a methodology of naturalism and common sense. These tools are used to build knowledge that is as secure as it can be under the circumstances, but they do not promise to give universal *explanations*. Visions can be checked, and the trustworthiness of various spirit-beings tested against "kabbalistic" protocols, but these are merely methods of dealing with uncertainty and of handling essentially unpredictable realities. That much was the case already with medieval and early modern grimoires, which tried as best as they could to equip the magician with tools to master and control unruly spirits.[163] Essentially unpredictable realities do, however, exist, and this is where Crowley differs from the "disenchanted" view: there are genuinely mysterious, incalculable powers at work in this world, powers that can only partially be tamed and controlled by the use of magical methods enforced with science. Intriguingly, Crowley's system thus appears more straightforwardly "enchanted" than that of Steiner. Naturalistic methods are devised to deal with genuinely mysterious and incalculable beings, in this world and in others, but there is no prospect of finally taming the demons or understanding everything perfectly. Perhaps ironically, as a result of his guarded scepticism, Crowley appears to avoid the complete "disenchantment of the higher

[163] See e.g. Asprem, 'False, Lying Spirits'.

worlds" that looms before Steiner's disciples. He avoids it because he does not, in the end, follow the strong epistemic optimism that holds complete factual explanations to be possible in the first place.

A paradox similar to the one faced by Steiner was noted by Hanegraaff as an afterthought to his work on the New Age movement of the late 20th century. The New Age movement 'tends to seek salvation in universal explanatory systems which will leave no single question of human existence unanswered, and will replace mystery by the certainty of perfect knowledge'.[164] In esoteric visions where the extension of reason leads to totalising claims of higher knowledge that encapsulates "life, the universe and everything", this is indeed the consequence. But we might ask, is there nothing left whatsoever of gnosis – the personal, direct, intimate and ineffable type that has been seen as typical of esoteric claims to higher knowledge? Little is left of it except the actual *experiential* dimension of attaining knowledge itself. Having read Steiner's *Knowledge of the Higher Worlds*, the occult student would still not know what it *feels like* traveling on the astral plane, seeing the true essence of a plant, or perceiving higher worlds directly. The personal experience, the *sensation* itself is the final incommunicable aspect. But embedded in a broader structure of precise rational knowledge, is not the experiential dimension merely analogical to our astronaut's personal experience of the gravitational pull of Mars, as opposed to the quantitative data produced by his experiments with the same phenomenon? This hardly counts as gnosis; it is merely an exotic case of the philosophical problem of *qualia*.[165]

It is only in the soteriological goal of higher knowledge that we find something more than unbounded reason. The most gnosis-like event in Steiner's system is the final, personal meeting with the Guardian of the Threshold; for Crowley, the parallel is the Knowledge and Conversation of the Holy Guardian Angel. No-one can tell the initiate exactly what to expect from these final encounters, although the path to it will have been explained in excruciating detail. In the final moment of soteriological gnosis there is, at last, the promise of a genuinely surprising experience. The broader significance of that experience would, however, have been revealed long before in textbooks, leaflets, and lectures: the experience will show him the way to absolute freedom. Deeply personal questions will now be answered: who am I, and what is my place in the

[164] Hanegraaff, *New Age Religion and Western Culture*, 524

[165] E.g. Thomas Nagel, 'What is It Like to be a Bat?'.

grander scheme of things? The final answer silences the final question. Thus freedom, too, attained through gnosis, dissolves the final mystery: it means, essentially, to learn of one's pre-ordained destiny, and pledge to follow it thenceforth with eyes wide open.

Conclusion:
Disenchantment and *Problemgeschichte*

The main argument of this book has been that the disenchantment thesis associated with the work of Max Weber must be reconceptualised; the evocative term of "*Entzauberung*" is better used to refer to an intellectual problem than to a socio-historical process. *The problem of disenchantment in Western knowledge cultures* thus provides an analytical framework for studying the complex and sometimes surprising relations between discourses concerned with the possibilities and limitations of knowledge – whether esoteric, philosophical, scientific, or religious. It provides an alternative to process-oriented narratives of the development of "Western culture", "Western science", and "Western philosophy", emphasising the conflicting responses of individual historical actors rather than the idea of an unstoppable march of abstract "processes". Focusing on the plurality of competing intellectual identities, and claims about the reach of knowledge, the problem of disenchantment offers a useful tool for those disciplines in which the disenchantment thesis has most often been invoked – particularly the history of religion and the history of science, but ultimately the history of knowledge more broadly. Moreover, adopting this approach means pursuing historical research along the methodological lines of *Problemgeschichte*.[1] On these final pages we shall have a closer look at the implications of this approach, while refreshing our memories of key points raised in the twelve chapters of this book.

[1] In adopting *Problemgeschichte* I am inspired by Kocku von Stuckrad's recent suggestion that this approach become the foundation for the academic study of esotericism. In his words: 'The study of esoteric discourses in European history of religion generates a field of research along the lines of *Problemgeschichte* ("history of problems"). The problems addressed by the academic study of esotericism relate to basic aspects of Western self-understanding: how do we explain the rhetoric's of rationality, science, Enlightenment, progress, and absolute truth in their relation to religious claims? How do we elucidate the conflicting pluralities of religious worldviews, identities, and forms of knowledge that lie at the bottom of Western culture?' As the reader will have noticed, the questions asked in the present work are very much on the same line, but they find their theoretical grounding in a broader "problem of disenchantment" rathet than in "esoteric discourse" as such. Von Stuckrad, *Locations of Knowledge*, 64.

One notable implication of the approach I have advanced is that the concept of disenchantment is brought into closer agreement with Weber's general methodological project, as will be seen. But reserving the use of disenchantment as a concept exclusively for a problem-oriented rather than a process-oriented historiography also has consequences for the way we approach the history of knowledge in general. Therefore, the first thing we must do is to have a closer look at what *Problemgeschichte* is all about and to what it stands opposed. When applied to disenchantment, the problem historical approach lets us construe a field of research in the history of knowledge. The contours of the field have been drawn throughout this book, but I will highlight the main points again here for the sake of clarity. Two additional questions emerge from this summary, which must be dealt with separately towards the end of this conclusion. The first of these has to do with explaining consistencies in the field that has been uncovered: how can we explain, from a historical perspective, that a number of otherwise disparate fields of culture are found to display important structural similarities? The answer will be sought in the *origin* of the problem of disenchantment, located in a handful of important developments in theology, philosophy of religion, and early Enlightenment historiography. The second question concerns the role of processes in problem history: does *Problemgeschichte* repudiate all references to processes, or do they still have a relevant role to play? I shall argue that the adoption of *Problemgeschichte* does *not* mean that all talk of process is meaningless, misleading, or wrong. It does, however, put strict methodological constraints on the conceptualisation, scope, and use of processes. At the very end of these conclusions I shall address a final dilemma that looms before the problem historian: how do we reconcile the claim that the formulation of scientific methodologies has been intertwined with ultimately "political" concerns about scientific identities with the fact that *Problemgeschichte* itself takes a very clear stance on methodology? Can the problem historian avoid taking part in the very same debates about the identity of the academic project that he has set out to analyse?

These final reflections will hopefully make it easier for the reader to place the totality of the present work, with its overarching argument and many constituent parts, in its proper scholarly context. I also hope to convince the reader that two main things have been achieved. On the level of methodology, I have suggested a solid framework suitable for a genuinely interdisciplinary history of knowledge. And, by applying this

framework throughout, I hope to have given fresh insights into significant conceptual relations between the scientific, religious, and esoteric discourse of a period that was crucial to the shaping of late modernity.

DOING WEBER ONE BETTER:
DISENCHANTMENT AND THE METHODOLOGY OF PROBLEM HISTORY

By embedding the concept of disenchantment in the broader methodology of *Problemgeschichte*, we can make Weber's original thesis more consistent with his own overall programme. Ironically, perhaps, one of the clearest formulations of what problem history really entails is found in a paper published in 1904 by none other than Max Weber himself. In this article, which focused on the methodology of the social sciences, Weber wrote that '[it is] not the "*factual*" relationship of "*things*", but the *conceptual* relationships of *problems* [that] underlie the research fields of the sciences'.[2] This pregnant sentence contains a clue to understanding how problem history differs from other ways of doing historical research. As Otto Gerhard Oexle has shown, *Problemgeschichte* as formulated by Weber and some of his contemporaries stands as an alternative to four different approaches to history.[3] Firstly, it opposes the naïve view of historical research as "mere descriptions" and accumulation of "facts".[4] Secondly, it stands in opposition to the related Rankian position of historical realism, by which the historian's business is to uncover "what really happened". Thirdly, it strives to avoid the radically relativistic alternative, summed up in Nietzsche's aphorism 'facta ficta', that history is "merely" a form of fiction: there are indeed historical "truths" to be found, but these are dependent on the 'intellectual relation of problems' rather than on the 'factual

[2] Weber, 'Die "Objektivität" sozialwissenschaftlicher und sozialpolitischer Erkenntnis', 166. The full quote reads: 'Nicht die „*sachlichen*" Zusammenhänge der „*Dinge*", sondern die *gedanklichen* Zusammenhänge der *Probleme* liegen den Arbeitsgebieten der Wissenschaften zugrunde: wo mit neuer Methode einen neuen Problem nachgegangen wird und dadurch Wahrheiten entdeckt werden, welche neue bedeutsame Gesichtspunkte eröffnen, da entsteht eine neue „Wissenschaft".'

[3] Important names here are the neo-Kantian philosophers Ernst Cassirer and Heinrich Richert, and contemporary German sociologists, most notably Karl Mannheim, Georg Simmel, and Ernst Troeltsch. See Oexle, 'Max Weber – Geschichte als Problemgeschichte'; Michael Hänel, 'Problemgeschichte als Forschung'; Reinhard Laube, 'Perspektivität'.

[4] Oexle, 'Max Weber – Geschichte als Problemgeschichte', 17.

relation of things'. Finally, *Problemgeschichte* in Weber's variety was intended to answer the challenge posed to the humanities by the natural sciences in a novel way: it rejected both the "scientistic" notion that the discipline of history must become an explanatory natural science in its own right, and the hermeneutic alternatives of Dilthey and others, in which the humanities were held to be radically different from the sciences as they were aiming at "understanding" (*Verstehen*) rather than "explanation" (*Erklärung*).[5]

Weber's methodological alternative to these positions was firmly grounded in neo-Kantianism: the humanities and social sciences must find their particular objectivity through reflection on the limitations of empirical knowledge in their particular fields.[6] Weber's contribution to *Problemgeschichte* thus lies in applying the essentially Kantian emphasis on the role of the active, knowing subject to the context of historical research. Just as any knowing subject sees reality filtered through the categories of understanding, the historian cannot avoid actively structuring, ordering, and selecting the materials that make up historical reality. The possibilities for history to appear have thus already been limited before any actual investigation of it is undertaken. It is in this sense that no "pure facts" of history exist; but this does not mean that nothing can be known, that all claims to objectivity are bankrupt, or that we need to embrace some form of subjective emotionalism on the basis of a methodological "Einfühlung". Instead, by reflecting on the categories and limitations of our understanding, we may proceed to formulate intellectual problems that may, in a self-conscious and methodical manner, be used by the researcher to order, structure, and analyse empirical material. These are the "transcendental" (in the Kantian sense) conditions in which historical research finds itself.

Weber followed these methodological principles with great success in most of his work. Weber's formulation and use of "ideal types" made it possible to construct areas of research based on analytically interesting conceptual relations, such as various forms of authority ("charismatic", "traditional", "rational-legalistic") or different forms of community-building (e.g. "Gesellschaft" and "Gemeinschaft").[7] The famous thesis on the Protestant ethic and the emergence of the capitalist system of production may serve as an excellent example of this methodology's application: the ideal-typical construct of

[5] Ibid., 16-17.

[6] Ibid., 17-18.

[7] E.g. Weber, *Wirtschaft und Gesellschaft*, 1-30

"inner-worldly asceticism" made it possible to connect the Calvinist ethic with the emergence of capitalism and thus establish conceptual links between areas of culture that lacked any obvious and direct *factual* connection.[8]

It has, nevertheless, been said that Weber was his own most formidable opponent: he was not always consistent in applying the principles he designed and advised for the scientific study of history and society.[9] The concept of disenchantment is a case in point. It was never systematically aligned with Weber's overall methodology, but was instead portrayed, more or less implicitly and without sufficient theorisation, as an unavoidable effect of the social processes of intellectualisation and rationalisation. This theoretically less sophisticated position has been adopted by Weber's later interpreters, the effect being that the "disenchantment thesis" has taken on a curiously un-Weberian shape. Correcting undertheorised views of the "disenchantment process" and reinstating the perspective of the problem historian has thus been the main agenda of the present work.

Referring to my discussion in the first two chapters of this book, we may identify three interconnected notions about disenchantment that must be discarded if we are to make the concept compatible with *Problemgeschichte*. These may be listed as follows:

1) *realism*; the view that disenchantment refers to an objectively real process that can be traced and described, based on a generalisation from historical "facts";
2) *progressivism/degenerationism*; the view that this process represents a progressive pattern in Western culture, away from irrationalism and superstition towards science, technology, and a rational order of society; or conversely, but by the same logic, that it constitutes a degenerative development by which the West drifts away from a noble, primitive past;
3) *disenchantment as explanation*; the notion that the process can be invoked to explain historical events, cultural developments, or individual utterances and actions.

These three notions belong together: the second and third point both rely on realism, and progress and degeneration are often invoked as explanations. Together, these

[8] Weber, *The Protestant Ethic and the Spirit of Capitalism*.

[9] Cf. Pals, *Eight Theories of Religion*, 185-7.

notions have had a number of negative effects on scholarship, as demonstrated in the opening chapters of this book. Above all, *realistic* narratives of the disenchantment process, whether of a progressivist or a degenerationist bent, have led to serious blind spots by which intriguing segments of present and past intellectual culture are kept hidden from view. They paint a monolithic picture of Western intellectual history, and tend to portray the roles played by "scientific" and "academic" cultures in ways that are much too simplistic. *Progressivist* narratives are, for example, typically a little too confident about the straightforward march of reason and the stable, "rational" identity of the scientific establishment. Even more problematic are the *degenerationist* counter-narratives that *invert* these stereotypes, creating demonised views of "materialistic science" crouched in a highly moralistic and politicised discourse. When such stereotypes are universalised and invoked as *explanations*, things really go wrong. Thus, in the "re-enchantment paradigm" discussed in chapter two, a disenchanted scientific mentality/ideology is thought to explain anything deemed wrong with contemporary society. A formidable causal power is thus ascribed to the presumed ideology of modern science, apparently capable of indoctrinating entire generations and acting as a primary cause of anything from environmental destruction, and world war, to mass-medication, consumerism, and the general "immorality" of modern society.[10] Simplistic in the extreme, such "explanations" in terms of disenchantment are obviously untenable from a historical point of view.

Narratives of progress and degeneration are both incompatible with the problem-historian's approach to disenchantment. Apart from the ideological biases underlying such perspectives, the problem is that there cannot be any data for such processes if we take the methodology of *Problemgeschichte* seriously. As Oexle states regarding this methodology in general:

> the fundamental difference between a narrative history and a "problem-history" consists in that the latter does not depict its object, but constructs it. The problem-historian knows that

[10] For an example of moral entrepreneurship along these lines, see Morris Berman, *The Reenchantment of the World*, 17. Cf. my discussion in chapter two.

> his materials are not the "facts", but rather that his knowledge is based on a conceptualisation of the objects of his research.[11]

Disenchantment cannot refer to a "real" process capable of being described by the accumulation and systematisation of independent "facts", simply because no such pristine facts exist, lying ready to be discovered: narratives of progress or degeneration can only be substantiated by actively establishing connections between disparate sources that are already pre-selected by the knowing subject and by the structural limitations imposed by its environment. The problem historian must recognise that even the best substantiated and convincing historical "process" is perceived by actively superimposing pattern on the material. The analogy to Kantian epistemology should be clear: the historian is no less dependent on the transcendental categories of understanding than any other observer.[12] However this may be, an even more important point follows from the problem-historian's reconceptualisation of disenchantment: the term can never perform any *explanatory* function. As a problem formulated by the scholar for the sake of analysis – standing between the historian and "history" in a way that is analogous to how categories stand in between the observer and "reality" according to Kant – disenchantment can only help us build knowledge about *conceptual relations* that we first recognise and formulate through reflection, and then encounter in an active engagement with a vast material of sources. The concept itself cannot *explain* the origin of the sources that they analyse.

The focus on explanation brings us to another way in which the approach developed in this book brings disenchantment into closer agreement with Weber's overall project: our approach must follow the principles of a methodological

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[11] Oexle, 'Max Weber – Geschichte als Problemgeschichte', 12: '… die fundamentale Differenz zwischen einer erzählenden Geschichte und einer „problem-Geschichte" darin bestehe, dass letztere ihren Gegenstand nicht abbilde, sondern konstruiere. Der Problem-Historiker wisse, dass sein Material nicht die „Tatsachen" sind, sondern dass seine Erkenntnisse auf einer Konzeptualisierung der Gegenstände seiner Untersuchung beruht.'

[12] With this I merely want to make a suggestive comparison, avoiding entering into a technical discussion of the applicability of Kantian categories to the historian's encounter with her empirical material. This would clearly require at least another book. For a condensed discussion of Kantian categories, see Amie Thomasson, 'Categories'; Derk Pereboom, 'Kant's Transcendental Arguments'.

individualism.[13] We cannot explain a certain historical actor's intellectual production – say, T. H. Huxley's paper 'On the Hypothesis that Animals are Automata' – by referring to the lawful unfolding of a disenchantment process. Instead, the rationale behind the production of works belonging to what we, for analytical purposes, have chosen to call a "disenchanted" discourse must be sought in the particular motivations, concerns, and agendas of specific historical actors. Explanation must go from particularities to generalities, not from generalities to particularities. The actions and choices of individuals explain the creation of a discourse of disenchantment, not the other way around. It goes without saying that the individual always remains embedded in discourse, and must always draw upon resources that are already present in his or her surrounding society; but the point remains that these surroundings do not sufficiently explain the choices and actions of the individual actor. Together, these two methodological points – problem history and methodological individualism – provide an approach to disenchantment that has enabled us to take a fresh look at relations between science, religion, and esotericism in the early 20th century.

THE CONTOURS OF A CONCEPTUAL FIELD

What new 'conceptual relationships between problems' have come to light by reconceptualising disenchantment along the lines of *Problemgeschichte*? Above all, the problem of disenchantment has enabled us to explore how a broad range of historical actors have dealt with fundamental questions concerning the relation between facts and values, where we are to draw the outer boundaries of what can be known, and how we can relate scientific knowledge to concerns of religion and worldview. These questions span epistemology, ethics, metaphysics, and soteriology. By analysing responses to such questions, formulated in a specific historical period, we have been able to trace a network of relations between discourses that otherwise tend to be kept apart. We have, for example, uncovered conceptual *affinities* between physics and occultism at the *fin de siècle*, between scientific biology and psychical research, and between methodological challenges in psychology and the practice of ritual magic. Equally important, however,

[13] See my discussion of this principle in chapter one. For the relation to Weber's own work, see Joseph Schumpeter, 'On the Concept of Social Value'; for a concise formulation of the principle, see Jon Elster, 'The Case for Methodological Individualism'.

are the conceptual *disjunctions* we have seen inside established scientific discourses: mechanists versus organicists in biology, behaviourists versus purposive psychologists, and differing positions on questions regarding causality, continuity, and scientific realism in physics. Together, these affinities and disjunctions destabilise dichotomies that otherwise appear intuitive and taken-for-granted, such as between an academic establishment and an "occult" underground, between scientific professionals and pseudoscientific amateurs, and ultimately between "accepted" and "rejected" forms of knowledge.

One particularly significant implication of this book's argument is that the identity of "the Western academy" has never been decisively settled, but always remains open for negotiation. The establishment is itself *pluralistic*, permitting a number of diverging and conflicting responses to the problem of disenchantment within its confines. To bring this crucial point into focus once more, we might recall some of the findings of previous chapters. Consider, for example, the natural sciences, where the problem of disenchantment was accentuated precisely in struggles to construct new scientific identities to replace older ones. In the case of physics, a young generation of ambitious and brilliant scientists cast themselves in the role of revolutionaries and proceeded to build an identity contrasted with earlier generations. These new identities rested not only on a perceived break with previous research traditions, but also on an active engagement with broader cultural impulses. The most notable case was German physics after the Great War. The rise of a pessimistic cultural atmosphere that was highly sceptical of what it considered "mechanistic", "materialistic" and "reductionist" sciences made it desirable to brand physics as a form of "culture" and "philosophy of life". Meanwhile, it now appeared wise to avoid the utilitaristic discourse that had earlier been so important for branding the discipline to financiers and government officials.[14]

I have identified the construction of scientific identity in this period (roughly the 1920s) as the origin of a highly influential "emic historiography of science". In this constructed memory of scientific development, designed to provide an identity that was easier to market in a culture suspicious of "modernity", 19th-century Victorian science was cast as the prototype of a thoroughly "disenchanted" science. Those who invented

[14] The full argument was spelled out in chapter four.

this narrative could no doubt build on some of the public writings of the Victorian naturalists in order to do this. However, they also had to gloss over the strong *idealist* impulse in 19th century physics, as well as the continued presence of natural theology below the surface of the "official" doctrines of scientific naturalism propounded, as it was, by a rather limited number of scientific professionals.[15] The result has been the creation of simplistic narratives of modern science, which have become broadly popularised and used to serve a number of different purposes. The notion of a "new scientific revolution" connected with the development of quantum mechanics, with deep implications for worldview, religion, and spirituality, is particularly notable in this respect. The view that a "disenchanted classical science" has given way to a "re-enchanted modern science", rife with mysteries such as complementarity, wave-particle duality, and acausality, has been perpetually reproduced by pop science journalism, "alternative" religious discourses, and humanities scholars with a superficial knowledge of the history of science.[16] However inaccurate it may be as historiography, it is crucial to note that this myth has its origin among physicists seeking an alternative identity for their profession. It means that the "emic historiography of science" is part of the plurality of academic discourse – not merely a result of non-scientific discourses (e.g. religious, philosophical, esoteric) trying to claim legitimacy by rhetorical appeals to science.[17] While the latter is certainly also a part of the story, it is significant that non-scientific actors could easily appropriate a framework that had already been produced by scientists.[18]

Physics was not the only discipline in which new identities were constructed along the lines of diverging responses to the problem of disenchantment. Similar dichotomies emerged within biology and psychology as well, as discussed at length in chapter five. The very ambition of defining "life" and "mind" proved to be intimately connected with the problem of disenchantment, and entire research traditions can be

[15] Cf. Ruth Barton, '"Huxley, Lubbock, and Half a Dozen Others"'. The dynamic between the Victorian construction of scientific identity, and the early 20th century inversion of it, see especially chapters two and four.

[16] See e.g. my discussion at the beginning of chapter four.

[17] Recall my discussion of "quantum mysticism" in chapter six.

[18] For the rhetorical uses of science by esoteric spokespersons, see Olav Hammer, *Claiming Knowledge*, 201-330. For the relation between scholarly creations and popular uses of "tradition", see Asprem and Granholm, 'Constructing Esotericisms', 36-45.

distinguished by the ways in which they answered it. The main question, of course, was whether or not the phenomena of life and mind were capable of being described completely in terms of mechanistic processes that were structurally indistinguishable from those studied by "classical physics". If so, it would mean that life and thought, as the final refuges of the non-mechanical and unpredictable, had also been disenchanted. Individuality, meaning, and free will would then have been reduced to little else than inconsequential epiphenomena of a perfectly predictable clockwork. If a mechanical explanation of life could *not* be found, however, one would have ascribed to living organisms an irreducible autonomy that essentially contradicted the "disenchanted world", introducing a mysterious factor that would, furthermore, make it impossible to understand and predict the complex workings of the world completely.

These were not matters of purely philosophical relevance; they were full of implications for the identity of biology and psychology as disciplines. If life and mind could be reduced entirely to material and mechanistic processes, then it would be easy to argue that biology and psychology must ultimately be framed as complex subfields of physics rather than independent disciplines in their own right. Some authors, such as Jacques Loeb in biology, and John Watson in psychology, indeed adopted this view, and set out to build strong mechanistic programmes in their respective disciplines. Others, such as Hans Driesch, William McDougall, and Conwy Lloyd Morgan, fought what they saw as illegitimate annexations of their disciplines, or as imprudent manifestations of "physics envy". A basic fault line thus erupted between mechanistic and non-mechanistic approaches, with neo-vitalists, Lamarckians, organicists and holists comprising a non-mechanistic wing that has often been neglected by progressivist accounts of the modern history of these sciences. When we place the life and mind sciences in the framework of the problem of disenchantment, we are able to uncover the conceptual relations linking the behaviourism debate in psychology and the vitalism controversy in biology. Moreover, we have found that these were linked to similar controversies surrounding the interpretations of quantum mechanics in physics, and to concerns in less scientifically reputable fields, most notably parapsychology. The problem of disenchantment thus provides a new conceptual map that enables us to trace the movements of historical actors who explicitly made connections between these diverse fields.

The case of parapsychology and psychical research, extensively discussed in chapters seven, eight, and nine, is crucial to understanding the role of the problem of disenchantment in modern intellectual culture. I have used the epithet "laboratories of enchantment" to describe parapsychological research programmes, and I think it points to some important characteristics of the field as a whole. We may illustrate them by recalling the main points of each of the three chapters on psychical research and parapsychology. First of all, we saw in chapter seven that psychical research arose from an epistemological discourse of "anti-agnosticism". This position was predicated on extending reason and scientific method to phenomena that were considered genuinely "enchanted", in the technical sense of appearing to be incalculable and mysterious events, and lacking an explanation within "normal" theoretical frameworks. Secondly, in chapter eight I documented how the field strove to overcome a plethora of methodological difficulties in its quest for a proper research paradigm for studying such phenomena. I argued that laboratories of enchantment were ultimately faced with the dilemma of quantifying the unique. Reproducible quantitative data were required by the increasingly sophisticated scientific methods of neighbouring fields such as biology and psychology. The result when applied to parapsychology was, however, that the supposedly enchanted phenomena drowned in a statistical average. As it turned out, the controversies that arose from this dilemma would contribute directly to the development of new statistical methods as well as innovative ways of controlling experiments on human subjects. Thirdly, the main argument of chapter nine was that parapsychology managed to achieve professional status within a university setting in the 1930s precisely by mobilising "enchanted" theoretical alternatives from across the spectrum of the biological, psychological, and physical sciences.

This third point is important, as it once again highlights the plurality of academic identities: it was possible to build and legitimise a new university discipline by emphasising "enchantment" and positioning it against theoretical trends tending towards "disenchantment". As was the case with the construction of new disciplinary identity in Weimar era physics, the professionalisation of parapsychology also illustrates the interplay with highly contingent contextual factors. We cannot fully explain the success of parapsychology's professionalisation campaign without acknowledging that the anti-disenchantment discourses it mobilised had particular force in the immediate cultural context in which professionalisation took place. Thus it

is not a coincidence that it was a newly founded university in the southern region of the United States (Duke, North Carolina) that came to be the first host of a complete parapsychology programme. The cultural disjunction between the northern and southern American states came to mirror the disenchantment/enchantment distinction itself: thus, parapsychology's disciplinary identity could easily accommodate a southern, "enchanted" profile, pitted against what was seen as a "disenchanted", northern "establishment". It promised not only to fight the rising tide of "northern" behaviourism, but also to establish a scientific line of defence for religion and conservative cultural values, appealing to Duke University's explicit goal of becoming an institution for 'conservative progress'.[19] The interplay between theoretical emphasis and cultural values in the construction of disciplinary identity is similar to the one identified for German physics after the Great War, where science was to be reconceptualised as "culture". In all of the cases we have considered – whether in physics, biology, or parapsychology – the problem of disenchantment emphasises the conceptual relationships utilised by historical actors in order to forge identities, extending from the scientific "hard core" of disciplines, to the philosophical, political, and cultural contexts in which they are embedded.

Problems similar to the ones encountered by psychical researchers were identified in esoteric discourses of the early 20th century. In chapter ten I argued that, following the Enlightenment and the growth of the natural sciences, esoteric discourse typically aligned itself with the epistemological attitude of an open-ended naturalism. While it is sometimes asserted that modern esoteric spokespersons have been able to withdraw their doctrines and practices from possible conflicts with science and rationality by relegating them to the purely psychological sphere of the imagination, I argued that occultists and spiritualists have typically been doing something quite the opposite. Whether intentionally or not, their desire to partake in the prestige of the scientific project actually led them to an open confrontation with science. As in the case of psychical research, open-ended naturalism not only promised the possibility of seeking scientific legitimacy; it also implied a commitment to adjust one's beliefs according to the evidence. They were ultimately forced to meet with disconfirmation and falsification in the form of alternative hypotheses and new evidence. This, I have

[19] William Preston Few, 'The Inaugural Address', 54.

argued, is a direct consequence of modern esotericists' common refusal to undergo the intellectual sacrifice. Precisely because esoteric spokespersons refused to play by the rules of a disenchanted world, preferring to avoid a strict separation of the spheres of religion and science, or empirical knowledge and absolute truths, serious tensions with empirical science remained a very real possibility. In chapter eleven I demonstrated how these inherent tensions were actualised in the context of Theosophy's engagement with science. There were two aspects to this tension. First, there is the possibility of empirical disconfirmation of specific factual claims made on the basis of occult practices such as clairvoyance. This was an inevitable problem for Theosophy's occult chemistry, which aimed to make contributions to scientific chemistry by clairvoyantly scrying the elements. Secondly, I pointed to an inherent tension between Theosophy's claims to perennial higher truth and the historical reality of scientific change. The ironic outcome was that the "wisdom of all ages" now appears suspiciously similar to the science of the 1880s.

Just as the other discourses we have examined, modern esotericism is characterised by a complexity of responses to the problem of disenchantment. Thus, in the last chapter of this book we saw how a comparison of two influential systems of esoteric epistemology from the early 20th century provided a unique insight into the range of epistemological possibilities available to modern esoteric spokespersons. The comparison of Rudolf Steiner and Aleister Crowley revealed first of all a radically different attitude to the acquisition of knowledge: Steiner emphasised a path of reverence and devotion, while Crowley stressed the importance of scepticism and rational criticism. Moreover, Steiner saw a sceptical attitude as directly detrimental to acquiring higher knowledge (equating it with "materialistic" science), while Crowley saw reverence as a first step to delusion and self-deception. The approaches could not have been more different. In our context, however, the most important point to make is that the perspectives of both Crowley and Steiner *reflected their intellectual contexts*. The difference between esoteric epistemologies is constructed along fundamental fault lines originating in academic culture. Steiner was a trained academic philosopher, and his *Geheimwissenschaft* reflected intellectual discourses prominent in Germany, especially post-Kantian German idealism and a growing emphasis on the methodological separation between the humanities and the natural sciences. Crowley, for his part, reflected the epistemology of British scientific naturalism, emphasising the

universality of scientific method, counterbalanced with influences from Anglo-American pragmatism. The comparison suggests that the plurality of the academy manifests itself also in the sphere of the occult.

This is not to say that general trends and patterns between the two are absent. As I argued throughout the final chapters, esoteric epistemologies appear to be based primarily on an approach to knowledge that may be identified – through a modification of the reason-faith-gnosis typology – as "unbounded reason". This is the effect of dismissing the intellectual sacrifice and extending epistemological optimism to all spheres of reality. Cosmology, theology, metaphysics – nothing is outside the grasp of human understanding according to this view. There are no limits to knowledge. Moreover, and contrary to absolutist knowledge claims typical of certain theological systems, knowledge can be gained entirely by the seeker's own initiative, through the use of special techniques or the cultivation and training of occult perceptual faculties inherent to human nature. The difference we have noted between Crowley and Steiner concerns the specifics of how such special techniques and faculties actually work; the fundamental assumption that higher knowledge can be achieved by those who seek it remains the same. Moreover, these esoteric knowledge claims diverge in a crucial way from the category of "gnosis", understood as purely experiential and non-discursive forms of knowledge. Appeals to unbounded reason importantly remain within an *evidential* discourse, leading to some very significant consequences that claims to gnosis simply lack. The evidential discourse of unbounded reason may have been appealing or even mandatory for those seeking scientific legitimacy, but it also became the source of serious friction between esoteric and scientific discourses, as we have just discussed. Appeals to pure gnosis would, perhaps, have been able to avoid the looming possibility of confrontation with disconfirming evidence. Something like this can be found in esoteric and new religious discourses of the post-war era, emphasising an increased turn to the self and an individualistic epistemology which only claims "what is true for me".[20] Esoteric spokespersons of the 19th and early 20th century, however, appear to have been much too hungry for scientific legitimacy and universality to pursue an individualised "gnostic" strategy consistently.

[20] See e.g. Hammer, *Claiming Knowledge*, 415-454.

NATURAL THEOLOGY AND THE ORIGIN OF THE PROBLEM OF DISENCHANTMENT

The unbinding of reason, far from being a feature of esoteric discourses alone, connects currents in all of the three fields that we have discussed in this book. The extension of the realm of fact and evidence beyond the boundaries imposed on it by theological and philosophical authorities of the Reformation and Enlightenment periods constitutes the promethean ambition of the psychical researcher and the esoteric visionary, but also of many of the scientists, philosophers and scholars that we have encountered throughout this book. Above all, the modern Prometheus rises in the field of natural theology: the fusion of theology, metaphysics, and modern science that we discussed in chapter six rejected the intellectual sacrifice as emphatically as the parapsychologist and the occultist. This also means that while Lord Gifford designed his lecture series in natural theology to avoid theological censorship, by disallowing any "religious tests", the whole project was still heavily biased. It was biased in favour of positions that earlier would have been considered heretical: it dismissed the infallibility of revelation, while it deemed the dispassionate study of nature to be a legitimate source of knowledge about the divine. As I argued in chapter six, this view rests on theological assumptions that, intriguingly, offer another connection with esoteric discourse: panentheism. The theological substratum that appears to support both natural theology and esoteric epistemologies is also the key to understanding why we see similar responses to the problem of disenchantment in this wide range of discourses. Understanding the connection between the problem of disenchantment and the theological underpinnings of the new natural theologies may also give us fresh insights into the development of Western knowledge cultures after the Enlightenment. So let us now be more ambitious, and move from describing relations between discourses to offer a tentative explanation of the relations that we have uncovered.

Doing so demands addressing a basic question: where does the problem of disenchantment come from? If we follow the logic of Weber's original argument, we might be tempted to say that it is connected to the sociological processes of "rationalisation" and "intellectualisation". The origin of a disenchanted mentality is found in the establishment of bureaucratic forms of governance, legal structures that appeal to rational principles rather than divine or magical sources of authority (i.e. "charisma" and "tradition"), and in the technologisation of production, business,

transportation, and so forth.[21] In this strict sociological sense, "disenchantment" takes the role of an ideological superstructure (pretty much in a Marxian sense) to changes in the infrastructure of society of a relatively recent origin, connected with the rise of capitalism, industrialisation, and the modern nation state. However, that is not the end of the story; Weber's own methodological orientation was committed to explaining infrastructural changes by referring to the motivations and behavioural dispositions of individual actors. Thus, intellectualisation and rationalisation, giving rise ultimately to "disenchantment", were not merely superstructural effect of infrastructural changes, but first came about as *theological* developments. Capitalism itself was but a material and institutional manifestation of an ethos born out of the universalised *askesis* of Protestantism. For Weber, disenchantment was, as we saw in the first chapters of this book, ultimately tied to theological questions concerning the transcendence of the divine. It was concerned with the relation between creator and creation, with the autonomy of nature, and the question of whether or not spiritual, supernatural powers were active in the world.

This theological background remains important even when we conceptualise disenchantment as a problem. It would, then, be possible in theory to apply the construct to all monotheistic theological systems where the immanence of divine and supernatural powers are bound to become a theoretical concern. From a historical point of view, anti-"pagan" polemical discourses of antiquity would be of interest to such an analysis, as would attempts to reconcile and legitimise the practice of "magic" with orthodox monotheism.[22] Viewed in this light, the early church's problem with "images" foreshadowed the mechanist's problem with vital forces.[23] The full crystallisation of the problem of disenchantment only took place in a much later period, one might say

[21] As seen in chapter one, this was the logic of Weber's argument in 1913. See Weber, 'Categories of Interpretive Sociology'.

[22] These polemical discourses are in fact fundamental for how "magic" has been conceptualised in the first place. See especially Randall Styers, *Making Magic*; Hanegraaff, *Esotericism and the Academy*, 164-177. Nevertheless, a magical discourse created by self-described "magicians" has existed since antiquity to the present day, much of which has struggled to harmonise "magical" practices with Christianity. For an essential overview of discursive uses of "magic", including as a term of "inclusion", see Bernd-Christian Otto, *Magie*.

[23] For a theorisation of the anti-image polemic in terms of a conflict between monotheism and cosmotheism, see Hanegraaff, 'The Trouble with Images'.

together with the shaping of modernity itself. The theological problem, although rooted in ancient paradoxes and frequently discussed in theological and philosophical works throughout the medieval period, only culminated with the protestant Reformation.[24] Later it became a philosophical concern in the so-called scientific revolution, particularly in the context of mechanistic natural philosophy, before it finally attained a recognisable shape in the critical projects of Enlightenment philosophers such as Hume and Kant. By the time of the late 18th century, the problem of disenchantment has come to concern much more than the mere existence of "mysterious incalculable forces". It is tied to the limits of human rationality, the foundation and reach of scientific knowledge, and the relation of knowledge to questions of worldview, ethics, and meaning. It is in this shape that we have met the problem in the present book.

The above excursus permits us to make two crucial observations. First, the problem of disenchantment is intimately connected with the process of theological exclusion that Hanegraaff has described as the exorcism of paganism.[25] Although he does not make this connection explicitly, it makes sense to see Hanegraaff's own approach as a form of *Problemgeschichte* focusing on "the problem of paganism" in Western intellectual history. This, furthermore, means that the problem of disenchantment is historically connected with the problem of paganism. As Hanegraaff observes, the process view of disenchantment is itself an Enlightenment reconceptualisation of the theological arguments formulated by the likes of Jacob Thomasius and Ehregott Daniel Colberg, with roots that go back much further.[26] Through the work of Enlightenment historiographers such as Johann Jacob Brucker, who has been extremely influential on later historians,[27] this narrative became a mnemohistorical script that orders our perception of the past even today. It is primarily

[24] We might, for example, see the medieval nominalism controversy as a manifestation of this fundamental philosophical problem. Moreover, the problem has always been at the heart of Christian theology, as an effect of the mystery of incarnation taking centre stage. Especially from the theological rejection of non-Trinitarian and docetist views during the council of Nicaea, Western theology has been founded upon an ultimately paradoxical interplay of transcendence and immanence. For the centrality of the problem of transcendence and immanence in the shaping of Western philosophy in the late medieval period, see especially Hans Blumenberg, *The Legitimacy of the Modern Age*.

[25] Hanegraaff, *Esotericism and the Academy*.

[26] Ibid., 371-372.

[27] Ibid., 137-147.

against the background of the mnemohistorical construct of a monotheistic and rational West that the problem of disenchantment becomes relevant. In this sense, the problem of disenchantment is the modern descendant of the problem of paganism.

The second observation is this: the origin of the problem of disenchantment in a specific theological context (the problem of paganism) means that answers to it are bound to some extent to follow set theological patterns, whether these are made explicit or remain implicit. What Reformation and Enlightenment authors rejected was not theologically arbitrary, as Hanegraaff has shown. The polemic targeted what were considered survivals of "paganism", or atavistic resurgences of "pagan" practice. Moreover, "paganism" was construed in a very specific form: according to Thomasius, the origin of all pagan error and the source of all heresies was the rejection of the doctrine of *creatio ex nihilo*. As Thomasius keenly observed, doctrines basing themselves in one way or the other on the eternity of the world not only dethroned the creator in an ontological sense, but threatened to dethrone him in epistemological and soteriological senses as well. It meant that there could, in principle, be true knowledge independent of divine initiative, and salvation without divine grace; the possibility of achieving knowledge by one's own initiative could be emphasised without the humility required in front of an omnipotent creator who was the "ground of being" on whom everything depended. Philosophical paganism in the sense of Thomasius covered all theological positions in which god(s) and the world were co-dependent; it also covered those views according to which humankind could achieve knowledge and salvation through the fulfilment of innate capacities rather than by the grace of a supreme deity. Whether these innate capacities were described in terms of a vastly extended reason, or a faculty enabling spontaneous gnosis, they were all in opposition to the humble faith and the *Dei sacrificium intellectus* demanded by orthodox theism and the mentality of disenchantment alike.[28]

Hanegraaff sees the exorcism of paganism as the historical event that created a concept of what we today call "Western esotericism". The consequence of his argument is that esotericism is not to be understood as rejected knowledge *simpliciter*, but rather as a category based on a specific *form* of rejected knowledge, systematically selected on the basis of (perceived) theological affinities with *panentheism* and *cosmotheism*. This

[28] For a history of this expression, and Weber's misattribution of it to Augustine, see Wolfgang Schuchter, *Rationalism, Religion, and Domination*, 537 n. 21.

goes some way in the direction of providing a minimum substantial basis for the concept – itself a significant achievement for the academic understanding of esotericism.[29] I suggest that the relevance of the argument reaches beyond the field of esotericism studies. The observations summarised above have important consequences for the argument of the present book, as becomes evident when we connect Hanegraaff's thesis with the problem of disenchantment. The connection between "disenchantment" and the rejection of "pagan theology" provides an explanation for the affinity between esoteric spokespersons, psychical researchers, scientists, philosophers and scholars involved with creating new natural theologies. By rejecting the main principles of disenchantment, most notably the intellectual sacrifice, the new natural theologies of the early 20th century automatically converged towards "paganism". The case can be made that natural science itself, when developing unhindered by ecclesiastical control and without the motivation to stay in harmony with theological orthodoxy, came to prepare the ground for a return of philosophical paganism. As I argued in chapter six, the secularisation of the university system facilitated the reconstitution of such a "pagan science". If we accept this analysis, we should not be surprised to find esoteric spokespersons enthusiastically borrowing from popular science, or natural theologians coming close to "esoteric" conceptions. The mutual attraction is based on an underlying theological compatibility, as well as a shared incompatibility with the theologically orthodox positions of theism and deism. The cultural logic driving this development was set during the Reformation and the Enlightenment.

On the Role of Processes in a Problem History of Knowledge

I have attempted to demonstrate that the history of knowledge would be served well by adopting the methodology of *Problemgeschichte*. Since my argument has been predominantly focused on reconceptualising a term that has often been characterised as a "process", I would finally like to address the status of processes in general. This is necessary because one might have gotten the incorrect impression that any talk of process is by definition nonsense. That is not a case I am ready to make. I still hold that

[29] Hanegraaff, *Esotericism and the Academy*, 369-374.

we may legitimately talk about socio-historical processes when they can be defined clearly in terms of observable gradual changes that tend in certain directions, leading to certain results that may not be immediately recognisable at any single point in the process, and not necessarily intended by the agents of change. Such an understanding is not in itself incompatible with *Problemgeschichte*. It is, however, imperative that the historian clearly recognises that the "process" he talks about is an analytical conceptual construct that *creates* diachronic sequence in the material. He does not *discover* the process as an independent factual relation. When used with care, "processes" may provide additional tools for problem history. Examples of this can even be found in the present book: a process of "functional differentiation" was, for example, involved in my argument concerning the relation between science and religion, and permits a strictly empirical definition in terms of legal and institutional bonds between universities and churches. On a smaller scale, "professionalisation" is another type of process that can be defined in terms of institutional formations, and helps to bring an analytic focus to developments relevant for one's study. Problems only arise when "processes" are taken for granted as objective realities, as being progressive/regressive (i.e. expressing some form of teleology), and/or being used as *explanations* in their own right. From the perspective of *Problemgeschichte* a process can be an interesting *explanandum*, but never a sufficient *explanans*. Thus I have sought to explain the professionalisation of parapsychology rather than using the professionalisation itself to advance an argument about the field's worth. I have looked at the interplay of individual agents and institutional and contextual factors to account for the counter-movement against differentiation that made the emergence of a new natural theology possible. Such cautious uses of process have only facilitated and supported my problem-focused analysis of conceptual relations in these diverse fields.

The role of processes in a history of knowledge consistent with *Problemgeschichte* can be further exemplified by looking at an important recent contribution. In 2007 Peter Burke, one of the foremost contemporary advocates of a "social history of knowledge", published a programmatic article on how this programme ought to address post-Enlightenment knowledge cultures. He did so by listing a whole panoply of processes that he thought particularly relevant for the suggested field of study:

> For the period 1750–2000, in which change has been so rapid …, I am imagining a study that will be organized … by major trends or processes, among them secularization, specialization, commercialization, industrialization, nationalization, globalization, bureaucratization and democratization.[30]

More recently, Burke has brought his project to fruition in a monograph-length essay, with the focus on processes very much still present. It is crucial for us to note that Burke's use of process, while remaining problematic, is not of the directly objectionable kind. To begin with, Burke emphasises that the processes he talks about merely have the status of *trends* that are neither total nor unidirectional:

> … if this essay has a single thesis, it is the importance of the *coexistence and interaction of trends in opposite directions*, an equilibrium of antagonisms that tips over into disequilibrium from time to time. The nationalization of knowledge coexists with its internationalization, secularization with counter-secularization, professionalization with amateurization, standardization with custom-made products, specialization with interdisciplinary projects and democratization with moves to counter or restrict it. Even the accumulation of knowledge is offset to some degree by its loss.[31]

Most of these processes are relatively easy to define, trace, and measure, making it possible to talk about ebbs and flows, trends and counter-trends in a way that is both meaningful, relatively precise, and attentive to nuances. Although I have deliberately avoided a processual nomenclature for reasons of stylistic consistency, many of the trends and counter-trends Burke refers to in the quotation above have in fact played significant roles in my own argument: for instance, nationalisation and internationalisation were crucial to developments in the natural sciences in the decades surrounding the world wars. The dialectic of professionalisation and amateurisation was central to the development of psychical research, as was the interplay of specialisation and interdisciplinarity. These constructs are all analytically helpful as long as they are not reified, and as long as they go together with a focus on the individual actors that create the "processes" in question by the choices they make.

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[30] Burke, '*A Social History of Knowledge* Revised', 526.

[31] Burke, *A Social History of Knowledge II*, 2. Italics added.

It is notable that "disenchantment" does not appear in Burke's catalogue of processes. That the term does not make its appearance even once may be indicative of disenchantment's problematic status as a "process".[32] As mentioned, "processes" must be defined in ways that make them open to empirical scrutiny. For example, concepts such as bureaucratisation, specialisation, or industrialisation all satisfy this criterion, since they concern institutional developments that may be quantified and checked without too much trouble. The situation is rather different for "disenchantment", as it is concerned with a mentality or an epistemological attitude. For this reason alone it is problematic to conceptualise disenchantment as a process.

Yet, there is little doubt that the marginalisation of "mysterious incalculable forces", the separation of facts from values, the call for an intellectual sacrifice, and the attempted elimination of "magic", "paganism", and the "occult" from establishment culture represent important intellectual trends that are in need of being studied and understood for a satisfying picture of modern Western intellectual history to take shape. Burke's social history of knowledge might superficially grasp some of these developments through a focus on processes such as bureaucratisation, secularisation, and professionalisation, but for a proper qualitative understanding of the issues at hand as well as their historical provenance they will inevitably remain insufficient. The undertaking of exploring the complex intellectual and religious concerns that are conveniently summed up by the word *Entzauberung* must take the form of a problem history rather than a process-oriented narrative history.

A Final Note on Objectivity and Neutrality

In closing we must face the fact that a serious dilemma still looms in front of the problem historian. He has boldly stated that academic identities are not fixed; the problem of disenchantment remained central to the ongoing negotiations about what science and the academy are supposed to be. What does it mean to point this out, *as* a scholar and an academic? Where does this apparently privileged position to analyse the identity-construction of one's peers come from? Complicating things even further, the

[32] Neither does it appear in his previous book on the history of knowledge, which focused on the period from the emergence of printing in Europe to the writing of the encyclopaedias; Burke, *A Social History of Knowledge*.

problem historian has demonstrated that questions of scientific *identity* are closely intertwined with questions of *methodology*, to such an extent that a claim about one must imply a claim about the other. Where does this place the historian himself, with his insistence on following certain strict methodological requirements while actively discouraging others? It has been argued that it was precisely Weber's neo-Kantianism that sometimes led him astray, leading him to paint a distorted, idealised picture of scientific activity. The approach to problem history that I have outlined on the preceding pages is itself indebted to Kantianism and to Enlightenment epistemology more broadly, so how do we avoid falling in the same traps as he did? How do we make sure that our scholarly production does not end up as yet another contribution to the political struggle about the identity of the academy and its role in society at large?

The short answer is that we do not and cannot avoid being political. The only conclusion that can be drawn from the above premises is that the problem historian, too, contributes to the political dimension of scholarship, and cannot do otherwise no matter how deep he should wish it. He may engage in critical self-reflection, and unmask the agendas that have informed other approaches, but it is a grave fallacy to argue that such reflections make his own position value neutral, purifying him from the contamination of politics and ideology altogether. That is not to say that reflection is futile. The value of reflection is that it acts as an antidote to the misconception that one's own position is self-evidently correct and must inevitably be shared by anyone blessed with a capacity for clear thinking. Reflection helps us to see that it is possible for two perfectly sane individuals to disagree on fundamental questions.

Even though we remain in some sense "political" by the very act of taking a stance on what constitutes appropriate methodology we *can*, therefore, avoid the most serious problems associated with such unavoidable political bias. For example, we can avoid the blind spot that was created by Weber's original statements concerning disenchantment. The source of the blind spot, as seen in the opening chapter of this book, was precisely a lack of reflection on the role of the individual scholar in defining the identity of academic research, and an accompanying failure to distinguish one's own agenda from the realities of the academy on the whole. When this misconception has been corrected through reflection, one can avoid projecting one's own values of how the academic *should* behave into analyses of how academics *do* behave. Weber's disenchantment thesis failed to clearly make this distinction, for reasons that are quite

obvious: it was formulated in a lecture addressed to a new generation of students, and aiming to teach them what the correct temperament of the scientific researcher ought to be. In doing so, it simply had to pass judgment on trends that, according to Weber's view of proper methodological conduct, were "wrong": for example, those who were ready to wed science with religion in their work were simply not doing sciene right. They had lost their intellectual integrity the moment they claimed to derive value statements from facts, and were from then on relegated to the dubious category of swindlers and self-deceivers.[33] This view is fair enough as a *political* statement about what one wants the academy to look like. As should be clear from the methodological reflections throughout this book, I am even sympathetic to it. But if this politically charged standpoint leaks into the analytical apparatus itself, and judgement is extended to those subjects that one wishes to study, it ceases to be a legitimate opinion and becomes a highly problematic bias instead.

The difference can be illustrated by reflecting once more on my discussion of the "re-enchantment paradigm". When I discussed scholars such as Morris Berman and David Ray Griffin in chapter two, I considered them colleagues, and read their publications as contributions to a historiography focused on disenchantment. In the end, I deemed their approaches to be wrong; I disagree with them, and think that I have strong arguments showing why their approaches are seriously flawed. To me, they do not even fit within the boundaries of what I think academic research should be about. My disagreement with the re-enchantment paradigm is, in this respect, comparable to Weber's disagreement with the fashionable *Lebensphilosophie* of his own days. Indeed, the logic of my argument in this book could even be used to postulate conceptual as well as historical links between the two. However, I would never delude myself into thinking that authors such as Berman and Griffin are not "real" academics: their intellectual production is clearly a part of the plurality of academic discourse.

Intriguingly, perhaps, if I were to move on to see these scholars *not* as colleagues, but as producers of empirical material to be analysed within the framework of *Problemgeschichte*, I would therefore stress that they should be included as important contributors to modern intellectual history, representatives of an ambitious and rebellious type of response to the problem of disenchantment. For Griffin, I could also

[33] See Weber, 'Wissenschaft als Beruf', 509

point out the relation to Whiteheadian "process theology", thus contextualising him as an important late contributor to the new natural theology of emergence. Meanwhile, however, I would remain prepared to use all the legitimate means of academia to make sure that the perspectives of Griffin and Berman do not gain further influence over the scholarly fields that we share as colleagues. There is no contradiction in this attitude. The crucial point is, to quote Thomas L. Haskell, that 'objectivity is not neutrality'.[34] I am certainly not *neutral* to claims about a re-enchantment of science, but I do aim for a degree of objectivity in describing the problems involved with such claims. In fact, it is precisely *because* of the striving for objectivity that neutrality is impossible. Thus the problem historian's dilemma is more apparent than real.

I think we can go even further, and say that it is those who would continue to insist that the dilemma is insoluble that are in the most precarious situation. Conflating neutrality and objectivity leads to a choice between two alternatives, both of which are problematic. The first option is to hold that neutrality *is* indeed possible, and that objectivity is based on being "neutral". The problems of this view have already been discussed at length: by thinking that one's own position has not only been arrived at by a striving for objectivity, but that the conclusions are themselves somehow "neutral" and "natural", a scholar may come to treat not only her colleagues, but also the various historical actors that she studies as being simply "wrong" or not worthy of further mention. The second alternative for those who conflate objectivity and neutrality is to *deny* that neutrality is possible and to argue that, since it rests on neutrality, objectivity is not possible either. At best, "objectivity" may refer to certain discursive practices or "rules" relative to pre-theoretical positions of a political or ideological nature; but even then it is little more than an instrument for exerting "political" power. As far as the formation of academic disciplines and research fields goes, this option may permit a form of disciplinary "tribalism": each discipline governs itself by the "rules" that it has set for itself, but there is no overarching objectivity to appeal to whenever two disciplines are in fundamental disagreement about what academic research is about. In such cases, all that is left is politics and power games.

To some extent, disciplinary tribalism is the current state of affairs in the humanities. Different disciplines, and even subfields within disciplines, have been able

[34] Haskell, 'Objectivity Is Not Neutrality'. This essay, which was first published in 1990, is also reprinted in a collection of essays bearing the same title: Haskell, *Objectivity Is Not Neutrality*.

to live as separate and internally autonomous "tribes" that do not interact in an overarching system of mutual checks and balances (for example, each discipline would have its own set of peer-reviewed journals, book series, academic associations and conferences, without much interaction with expertise in other disciplines). This solution may have been attractive because of the autonomy it provides each discipline, but it is also associated with a number of problematic consequences. One of these is that, despite the term "interdisciplinarity" having become a standard element in the rhetorical repertoire of scholars and administrators alike, any *real* interdisciplinarity has been very difficult to achieve in practice. Broader research fields in the humanities have typically been characterised by *multidisciplinary* rather than *interdisciplinary*. The difference is crucial: multidisciplinarity means merely the co-existence of different disciplinary approaches, exploring the same materials side by side, but without engaging critically with one another. Multidisciplinarity is a consequence of academic tribalism, since no group will answer to the authority of another, or dare to interfere in the affairs of another "ethnos". Interdisciplinarity, by contrast, requires that disciplines actively engage each other's methodologies, concepts, arguments, and findings, and try to arrive at some form of mutual understanding through rational, "objective" dialogue. To use the term I coined in chapter two, genuine interdisciplinarity must rest on an "endoxic principle": it must take specialisation seriously, and respect the "good opinion" of experts in other disciplines. Those who seek interdisciplinarity should, of course, engage critically with such opinions, and might even end up correcting experts of other disciplines by pointing out blind spots that had gone unnoticed. By the same token, however, one must be prepared to throw out any badly grounded opinion that one might oneself have held, and recognise any blind spots that might have formed in one's own discipline whenever they are exposed by the better knowledge of specialists with approaches and research agendas that are different from one's own. Ultimately, this means that one must be ready to dispose of the autonomy of one's field altogether.

To follow the endoxic principle and practice genuine interdisciplinarity requires accepting a minimum degree of objectivity. This means that the system of disciplinary tribalism must be rejected. The ideal of objectivity must, however, be sharply separated from any claim to neutrality. Steering clear of both extremes and providing a foundation for genuine interdisciplinarity, one that dares to stake a claim to objectivity while recognising that objectivity is not neutrality, is perhaps the most valuable contribution

that *Problemgeschichte* has to offer the humanities. It is my hope that the present work can act as an invitation to further research along these lines.

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Summaries

The Problem of Disenchantment: Scientific Naturalism and Esoteric Discourse, 1900-1939

This book presents a novel thesis on Max Weber's notion of the "disenchantment of the world". According to Weber, the disenchantment process was driven primarily by the modern natural sciences, leading to the disappearance of "magic" and the absolute separation of the spheres of science and religion. Combining history of science with the history of religion and esotericism, this work demonstrates that the modern natural sciences, *pace* Weber and his interpreters, cannot easily be described as having led to a disenchantment of the world. Instead, we find a number of significant overlaps between science, theology, and broadly "esoteric" outlooks, particularly in the form of "new natural theologies" and in philosophical positions defined as "open-ended naturalism". These overlaps, moreover, signify areas where individual scientists and scientific institutions (journals, lecture platforms, scholarly societies) have suggested implications of their own work that go *against* the technical understanding of "disenchantment" – *viz.*, countering strict mechanism, materialism, and/or reductionism, in favour of "re-enchanted" scientific worldviews, advocating the continuity between scientific research and the value spheres of religion, metaphysics, and ethics. While such reenchantment projects are well-known from "alternative" and "New Age" circles in the post-war era, a significant find of this work is that they were predated and prefigured in the intellectual production of influential pre-war scientists, scholars, and philosophers.

While this challenges the notion that modern science has been a straight-forwardly disenchanting agent, that is *not* to say that we are forced to accept the opposite view, often argued by post-war spiritual activists and some postmodern scholars, that the radical scientific changes of the early 20th century "naturally" suggests a form of "reenchanted science". Avoiding such simplifications, this book instead proposes a new model of disenchantment that is able to account for the ultimately *ambiguous* role of science in the production of worldviews and

identities. This model implies a change in focus, which can be summed up as a shift from *process* to *problem*: disenchantment should not be seen as a trans-historical "process", but as a historically situated intellectual *problem*, to which individual actors – within and outside of academia – have found different responses.

Adopting and developing this model permits the writing of a historical narrative of the cultural entanglements of the pre-war sciences that brings surprising complexities to the fore. The book thus analyses responses to "the problem of disenchantment" in the established and emerging sciences of the early 20th century (physics, chemistry, biology, and psychology), the prospective science of parapsychology, and in prominent Western esoteric discourses (to wit, Theosophy, Anthroposophy and Crowleyan ritual magic). The work is concluded by a discussion of the broader implications of adopting a methodological stance of *Problemgeschichte* for the writing of intellectual history.

Het probleem van de onttovering:
wetenschappelijk naturalisme en esoterisch discours, 1900-1939

Dit proefschrift presenteert een nieuwe these over Max Webers notie van de "onttovering van de wereld". Volgens Weber werd het proces van onttovering in de eerste plaats aangedreven door de moderne natuurwetenschappen en leidde het tot het verdwijnen van "magie" en de absolute scheiding van de sferen van wetenschap en religie. Door wetenschapsgeschiedenis te combineren met de geschiedenis van religie en esoterie laat dit werk, anders dan Weber en zijn interpretatoren, zien, dat de moderne natuurwetenschappen niet makkelijk beschreven worden als de aanstichters van de onttovering van de wereld. In plaats daarvan vinden we juist een aantal belangrijke punten van overlap tussen wetenschap, theologie en breed genomen "esoterische" gezichtspunten, vooral in de vorm van "nieuwe natuurtheologieën" en in wijsgerige posities die gedefinieerd kunnen worden als "naturalisme met een open einde". Deze punten van overlap zijn bovendien te vinden in gebieden waar individuele wetenschappers en wetenschappelijke instituten (tijdschriften, podia voor lezingen, academische gezelschappen) hebben gesuggereerd, dat implicaties van hun eigen werk tegen het technische begrip van "onttovering" ingaan – namelijk door strict mechanisme, materialisme en/of reductionisme tegen te spreken, ten gunste van "hertoverde" wetenschappelijke wereldbeelden en door de continuïteit tussen wetenschappelijk onderzoek en de waardesferen van religie, metafysica en ethiek te bepleiten. Uit de "alternatieve" en "New Age" kringen van na de oorlog zijn zulke hertoveringsprojecten bekend, maar een belangrijke vondst van het hier gepresenteerde onderzoek is, dat deze werden geantidateerd en voorschaduwd in de intellectuele productie van invloedrijke vooroorlogse wetenschappers, academici en filosofen.

Hoewel dit de notie van de moderne wetenschap als een ondubbelzinnige veroorzaker van de onttovering uitdaagt, betekent het *niet* dat we gedwongen zijn de tegenovergestelde opvatting aan te nemen, die vaak door na-oorlogse spirituele activisten en sommige postmoderne academici wordt beargumenteerd, namelijk dat de radicale wetenschappelijke veranderingen van de vroege twintigste eeuw "natuurlijk" een vorm van "hertoverde wetenschap"

suggereren. In dit proefschrift wordt zulke simplificatie vermeden en in plaats daarvan een model van onttovering voorgesteld, dat rekenschap kan geven van de uiteindelijk *ambigue* rol van wetenschap in het ontstaan van wereldbeelden en identiteiten. Dit model impliceert een verandering van focus, die opgesomd kan worden als een verschuiving van *proces* naar *probleem*: onttovering zou niet moeten worden gezien als een transhistorisch "proces", maar als een historisch gesitueerd intellectueel *probleem*, waar individuele historische personen – binnen en buiten de academie – verschillende antwoorden op hebben gevonden.

Het aannemen en ontwikkelen van dit model staat een historisch narratief toe, waarin de verrassende complexiteiten van culturele verwikkelingen van vooroorlogse wetenschap naar voren komen. Het proefschrift analyseert dus antwoorden op "het probleem van onttovering" in de gevestigde en opkomende wetenschappen van de vroege twintigste eeuw (natuurkunde, scheikunde, biologie, psychologie), de toekomstige wetenschap van de parapsychologie en in prominente westers esoterische discoursen (Theosofie, Anthroposofie en Crowleyaanse rituele magie). Het werk sluit af met een discussie van de bredere implicaties van het aannemen van een methodologische positie van *Problemgeschichte* voor het schrijven van intellectuele geschiedenis.