

THE ENGINEER AND THE PIRATES OF MAIDA VALE

The BBC Radiophonic Workshop

Looking at the past is like peering down a telescope, often seemingly from the wrong end, but the lens of time always reveals the significance, or perhaps insignificance, of our achievements. Unlike a Brunel or Stephenson, whose monuments remain for centuries, the works of an electronics engineer stay for just few years, and even the creations made using them just a short while longer.

For an insignificant engineer such as myself to write some kind of autobiography might seem boastful, but there are many who, like me, quietly kept the machines running, who found themselves in positions they never planned, and did achieve a little something.

At one point in time there was something significant in the Radiophonic Workshop's engineering, as Brian Hodgson wrote:

[The website] was created by Ray White who was my Senior Engineer when I took over as Head of Department in 1984. I managed to get a proper budget for the first time in its history, and Ray and his colleague Ray Riley supervised the complete refurbishment of the department, its computerisation and creation of four new studios, one of which was described by Yamaha's Chief Engineer as the 'most sophisticated MIDI studio in Europe'.¹

The Engineer

I am descended from rather lowly stock.

My mother, who became a cleaner to the wealthier people of Brighton, grew up in a two-up, two-down terraced house, sleeping with her mother and two sisters in one room, plus her brother who was in the back room and a lodger in the parlour.

There was an outside yard with scullery and toilet, and a naked gas flame lit the bedrooms, the gas meter being attached to the wall above the front door. Abandoned by her husband, grandmother and her children would hide quietly whenever the rent man called.

My mother would never have dreamt that her son would get a degree or work at the BBC in a world of electronic sounds.

My father, a painter and decorator, was born in the fishing town of Hastings, and was descended from West Country families. His father, a coachman, came from the Forest of Dean and is said to have seen *Buffalo Bill's Wild West Show* in Hastings in 1904.

In 1933, my father was caught breaking and entering a jewellers shop, along with others, saying 'I am on the dole and did it to obtain food'. All those involved were given a second chance.² Then came World War II and experiences he declined to recall, but sometimes he would explode with rage, no doubt arising from those memories.

In a further instance in 1950, having been stopped by a policeman for ignoring a road sign, he responded via a letter saying 'I think the constable who stopped me was a young man and very zealous in his duty. It must take most of his wages to buy notebooks.'³

What creates an introvert, intuitive, thinking and judgemental (INTJ) engineer? Is it nature or nurture? Whatever the cause, society tends to discriminate against those that are not extrovert, treating the nerd or geek as some kind of disabled person, yet at the same relying on such concentrated minds to keep the world turning.

Certainly the bullying of my childhood did nothing good, the claustrophobia of being beneath a mass of other bodies, or being locked up by my parents in the dark cupboard under the stairs. The girls were very often the worst, eventually causing me to go into a rage and overturn a small shelving unit, leaving them to clear up a huge pile of hymnbooks. That seemed to fix the problem.

Apart from this, school was fine and, despite failing the 11-plus, I progressed well, at the same time exploring the world of electricity in the form of modified valve radio receivers, listening to short wave broadcasts from as far away as South America, hearing the moon landing in 1969 via a home-made super-regenerative receiver and a crystal earpiece, or manipulating existing sounds with an old Philips tape recorder, microphones and loudspeakers.

These enthusiasms expanded during my A-level years to working on sound and lighting for the school stage, in which there was entirely

no regard for safety. An additional 100A cable was installed and its robustness tested by shorting it out to the fusebox, causing a teacher on the second floor to express some concern regarding the flickering lights. Thankfully, an experimental lighting programmer, based on a metal cylinder fitted with bolts in the appropriate places and connected directly to the mains supply was not fully progressed. A year after I left, the hall was gutted by fire, apparently caused by an electric heating ring, installed in the control box to make the tea.

A rather less dangerous modification to the sound system involved connecting everything to a very safe earthing point, the consequence of which was a very loud and annoying hum on the audio system.

And then one darkening evening it was decided that we would connect the loudspeaker systems between the Upper and Lower Schools, which involved surreptitious digging of a small trench in the grass and the secret installation of the necessary wire.

I knew about the Radiophonic Workshop at the time from the signature tune for *Doctor Who*, to which I had jiggled around at the age of eleven, as well as the effects disks used in our stage plays, but its work lacked the depth and energetic impact of the Moody Blues, Cream, Pink Floyd, Jimi Hendrix and the Velvet Underground, and so, unfortunately, had very little influence on my musical tastes.

The Degree

Having neglected my studies for such extracurricular activities, I found myself with just one A-level, in Physics. Fate decided that the son of my careers advisor, in the same situation, had enrolled in a Higher National Diploma (HND) course, which, after a year of study, allowed him to transfer to a degree course. And so I went to Portsmouth Polytechnic, a superb institution at the time, one that made mathematics, pure and applied, seem very easy indeed.

The course was a 'thick sandwich', in which academic studies alternated with real jobs, including time on a small production line at an audio manufacturing company, working at the Admiralty Surface Weapons establishment, including a visit by rubber boat to install electronics in a buoy floating off the Isle of Mull and

analysing the signals so produced, and a stint at a machine tools company, so convincing me to avoid forever the world of industry.

Once equipped with a degree, it was necessary to embark on the nightmare of finding a real job. After receiving lots of material involving the world of 'professional recruitment', I decided it would be easier to commute between home and London and work at the BBC. The interview, better described as an interrogation, went fairly well, and I soon found myself, armed with a toolbox suitcase, in a scruffy 'shift room' on the fifth floor of Broadcasting House.

The Pirates

Brian Hodgson, one time Head of the Radiophonic Workshop recalls an Engineering Management gathering in 1977, where he was told by a senior member of the engineering staff:

*'I think I've got the measure of you. You're a bloody pirate just like Desmond. And, by the way, we are all seriously underfunded at the moment. There is an enormous backlog of replacement needed for the broadcast studios, and your department, dear boy, is very low on the list of priorities.'*⁴

The problem with such a statement is that most people who actually achieve anything in this world, as opposed to those who promote themselves, are often seen as 'pirates'. Indeed, those who created the British Broadcasting Company in 1922, like those who boarded the pirate radio ships of the sixties, were often enthusiasts, geeks and nerds, many without any experience in the medium of radio.

London's Broadcasting House was completed in 1932, but even at the very beginning it was found to be inadequate for the BBC's ever-expanding output. As a result, the Corporation acquired a huge estate of other buildings; unwanted theatres, cinemas, halls, the upstairs rooms of shops, anywhere that could be used for broadcasting, all of which were probably easy to purchase during the difficult years between the wars.

Once such building was a huge Edwardian rolling skating rink on Maida Vale's Delaware Road, the largest part of which was to serve as an excellent orchestral studio, the upstairs balconies having been

converted into a famously long corridor, with the remainder divided up into smaller studios. Rooms 13 and 14, along with a studio area in Room 15, were used for experimental wire recorders prior to World War II, but some of the original equipment was still in place right up until the seventies. The building also had a control room at the centre, later reinforced to protect it from wartime bombing.

The Ship

It's often said that Broadcasting House (BH) resembles a ship sailing along Regent Street, and by the time it got to the early seventies its interior was looking somewhat like the interior of one.

Despite a newer extension to the north, fitted out with a modern-looking control room and broadcast 'continuity suites', the original part of the building retained several pre-war studios, the corridors lined with cables, with sandbags stuffed in ceilings and floors to reduce the danger of fire. It was a 'make do and mend' setup, a hangover from the necessities of World War II.

And many of the staff actually came from the services, either after fighting in the war or following National Service. As a result, the Corporation was a mix of Military, Civil Service and purely amateur enthusiasm, allowing anyone to rise to the top, but only if they could survive getting through the inevitable interview boards.

As a trainee engineer, I was soon working alone on shifts at BH, even before going to the Engineering Training Centre. The work could be stressful, as when changing a stylus under the gaze of Alan Freeman, or being looked at rather accusingly by a line of staff in the *Woman's Hour* studio, with their tape recorders disabled because of me, sweating with stress and heat, having received shocks from the 50V supply and needing to turn it off.

To gain some initial experience, I was rotated through several departments, finding myself being deafened by the sound of Big Ben at the top of the Elizabeth Tower whilst changing its microphones, dubbing old dictation machine vinyl discs, as recorded by the Austrian-British philosopher Karl Popper onto tape, scrabbling beneath the stage of the Royal Albert Hall while checking audio

circuits and sleeping in an awful room in Carlisle with six beds that was located almost on top of the West Coast mainline railway.

Attachments

Inevitably, my turn came to spend time at the Radiophonic Workshop, a place that most of my fellow engineers wanted to avoid, since it had the reputation of being something of a backwater, which indeed it was, despite having been the birthplace of the *Doctor Who* theme all those years before.

Apart from the morning arrival of the Workshop's Engineer announcing that it was time for tea, there seemed little to do. Investigating Room 12 early in the day, which was mainly occupied by Dick Mills, I found the room to be in a state which I later discovered was little changed from twenty years before, apart from it being more grubby and badly maintained. So, without any official sanction, I modified the mixer to reduce an undesirable hiss. A rather piratical beginning to what would happen in the future.

The attachments continued, with one at Radio Brighton, during which time Radio Engineering management informed Desmond Briscoe, entirely inaccurately, that I would not be returning. The attachment wasn't entirely unsuccessful, but the need to drive a car and the provincial and frankly amateur nature of local radio sent me away from this crossroads, perhaps at some personal loss.

Back at the Workshop, I found it being run by someone entirely unsuitable, working on a mixer project also entirely unsuitable, and being connected up by an equally unsuitable wireman. All three were summarily, one by one, returned to Broadcasting House.

Promotion

Being an introvert is a serious problem when it comes to interview boards, which my first attempt at becoming Senior Engineer Radiophonic Workshop clearly demonstrated. Today it would be the same, yet any other disability would no doubt be considered with more sympathy. I remember reading more recently about a

university student whose degree was dependent on being able to present a thesis in the lecture theatre. I would have failed as well.

In 1979, following the fiasco with the previous appointee, Brian Hodgson and Desmond Briscoe, the latter hoping for a happy retirement, decided that I should get the job no matter what. So, in cahoots with Alan Stokes, then Senior Engineer Maida Vale, I was subjected to a 'dummy' interview board with all three of them.

My success at the real board must have sent shockwaves through Radio Engineering. I had leapt six grades from an operational to a management level, and only after six years in the Corporation.

Perhaps as some kind of mitigation, the management placed my work on the new Studio E, then being built for Paddy Kingsland, under the supervision of Alan Stokes. And, perhaps to lump all the 'pirates' together, or to undermine my position even more, Ray Riley, a far more experienced engineer than myself, was transferred from the main studios at Maida Vale to work as second engineer.

Fortunately, Ray Riley had a huge amount of knowledge about Neve studio installations and, like anyone being managed, deserved to be treated as an equal by his manager. Many years back he had refused to go to Wood Norton for Engineering training, having a new wife and young child at the time. He continued to refuse over the years, which meant he was doing work far beyond his grade and no longer 'fitted' within the revised staffing arrangements at the main studios.

The installation of Studio E went relatively easily, since it was really a clone of what was 'downstairs', although Radio Projects made a horrible mistake in not realising that the desk would not fit through the door, so necessitating it being put on its back, resulting in problems with the module connectors throughout its life.

Progression

Following the complete success of Studio E, most subsequent installations were created with little intervention from Radio Engineering. The Head of the Workshop would look at the available technology, most of which was perfectly acceptable, in my eyes at least, and would be invariably approved by the Technical Facilities

Committee, which met once a month. How much was understood by the committee could be a matter of debate. After each gathering I would down a pint of Bass at Victoria station and then write the necessary minutes whilst travelling on the train back home. I suspect some piratical bias may have leaked into the writing thereof.

Each project was then progressed as a 'scheme' to the higher levels of management and, once approved, I would order the required parts against the agreed scheme number. Funding was added to the maintenance budget, but no further monies were ever needed.

Designs

All the studios based on Soundcraft desks were easy to build. I did all of the major design work myself in the manner of a beneficent dictator. The dimensions of the room and door positions were measured and then the positioning of the elements worked out, including the mixer, tape machines, jackfield, acoustic boxes, notice boards, electrical trunking, light switches and sockets.

When received, there were never any comments made about the plans from the Head of the Workshop or the composers. The management of Radio Engineering received even less information and did not offer any feedback, so at that point I assumed I was to be trusted, even with all health and safety issues left in my hands

External contractors were rarely used, although House Services would do the electrical work and the Maida Vale handyman was able to make highly skilled changes to other elements on site.

As for the audio wiring, this was done by myself and Ray Riley, the latter usually doing the lion's share of the work, although we sometimes used the Wiring Shop at BH for detachable cables.

Circles

In 1987, Peter Howell came up with the utterly brilliant but technically challenging concept of creating a studio entirely from a number of Yamaha *DMP7* audio mixers and Akai *DP3200* routers. After an experimental phase was completed, and following further

discussions with Peter and some prolonged cogitation by myself, we finalised the details of the studio's connection system.

As for the structure of the desk itself, I was very grateful and relieved by the work of furniture designer Jeremy Quinn, without whom the design would never have been such an elegant success.

The biggest challenge was to create a monitoring unit, similar to those familiar to anyone operating a BBC mixing desk. Different solutions were used in Studio F and in the subsequent Studio B, but both, when viewed in hindsight, were rather excessively engineered. By the time Studio D was built we could purchase a suitable off-the-shelf unit, although even this had several shortcomings.

Once again, the design of room layout was down to myself, although this was now far simpler, with a more rational use of acoustic boxes, and no need for a jackfield or any technical trunking. Within the circle itself every last vestige of BBC tradition was abandoned: balanced circuits had gone a long ago, jack plugs and phono plugs were perfectly acceptable, as were IEC mains connectors.

Detachment

Communication between those of an artistic disposition and those from the engineering world can often be difficult, the artist seeing their ambitions devoid of the detailed problems that an engineer may encounter. Whilst developing the 'circular' studios some friction did emerge, revealing my typically introverted defence mechanism; an apparent air of superiority or an 'abrasive attitude'.

Around this time Brian contributed this to my annual report:

He would perhaps, be happier in a situation where the work is more rigidly defined than in a department where life is entirely dependent on the requirements of the programme and the composer which can be messy, unpredictable and often tiresome.⁵

My nine month attachment to Radio Projects in 1989, originally suggested by persons unknown, was a total nightmare. Allocated a corner desk, I initially stared at the walls, regretting my decision.

The work consisted of writing ‘cases’ for projects, which were sent up the innumerable tiers of management and then returned through these layers to be rewritten. Brian had thought I might ‘vegetate’ at the Workshop: I would have deteriorated faster had I stayed here!

Although I managed to get through almost a million pounds of licence-payers money, little of importance, apart from some initial planning, was completed. At the end of it all, I was asked to write a report, in which I totally tore apart the structure of Radio Projects and the behaviour of some of its staff. A few months later the department was ‘reorganised’ with numerous redundancies.

On my return, little had changed, although Ray Riley had been busy constructing ‘monoliths’, so as to add many of the abilities of the of the new circular studios to the old Soundcraft installations.

Work then proceeded on Studio X, which because of our earlier experiences with the installations of Studios B and F, was actually very straightforward. Such areas were ceasing to be engineered studios, but more like an acoustic area containing a piece of elegant furniture, fitted out with numerous ‘black boxes’ plugged together.

The Choice

John Birt had been appointed in 1987 as the BBC’s Deputy Director General, under the command of Michael Checkland, and in 1990 the new Broadcasting Act came into effect, requiring at least a third of BBC programmes to originate from independent companies.⁵

By the end of 1991 it was apparent that a move towards a more fully-costed BBC operation was underway. Unsurprisingly, Brian often looked worried in these days, perhaps fearing what was to come.

In 1992, Birt was promoted to Director General and by 1993 implemented *Producer Choice*, splitting the Corporation into ‘core’ operations and ‘business units’, the latter having to be profitable within five years. This, supposedly, would incentivise such ‘businesses’ to become more efficient, but it was very clear at the beginning that the Workshop, given the salaries of its staff and the cost of its prime London site could never balance its books, especially as it lacked the freedoms of a real-world business.

Various possibilities were explored, including the idea of relocating the Workshop outside of its expensive site in London, but this option was crushed by an inevitable lack of financial resources.

One BBC member of staff said that before *Producer Choice*:

*“We were a pretty unaccountable rabble... We had little or no idea what our programmes cost and didn’t really care.”*⁷

The question at the time should surely should have been this: should those people making programmes for a public service provider be too concerned about the money? Is it the best use of abilities and skills for everyone to be spending all their time counting coins, filling in forms, ticking check boxes?

There can be little doubt that the BBC had been over expansionist during the early eighties, but, instead of moderating costs on an ongoing basis, there was an enormous overspend, based on the fact that the licence fee would keep on endlessly rising.

In 1993, the year that *Producer Choice* was finally introduced, five thousand BBC staff lost their jobs. Brian indicated that there was inadequate funding to retain any Radiophonic engineering posts.

Setting Sail

The invitation to take up voluntary redundancy came at a very good time for me. The Workshop was fully equipped with fairly modern equipment and, with the Studer multitrack machines later replaced by Alesis *ADAT* recorders, would easily survive another five years.

Indeed, the technology at the Workshop had reached a zenith. Any future developments would be within the world of computer software, perhaps accompanied for a while by some hardware that would be inaccessible to a ‘traditional’ maintenance engineer.

Although offered the chance to work in the maintenance team from the ‘downstairs’ studios, who would also now care for the Radiophonic areas, I leapt at the chance to leave at once.

I had worked at the BBC for nearly twenty years, fourteen of which were spent at the Radiophonic Workshop. My reward, apart from the challenges and joy of the work, was a very good redundancy

payment and the promise of a pension at the age of fifty. I very much doubt if I would have been employable anywhere else, or have found anywhere that gave me so much engineering pleasure.

On the day of my departure Brian Hodgson wrote:

I would not wish the occasion of your leaving to pass without an acknowledgement of the excellent and undoubted contribution you have made to the engineering integrity of the Radiophonic Workshop.

You inherited a mess and have left us with a well engineered set of studios built to the highest standard. Your project management has been superb and I believe that the BBC has lost an excellent engineer. I know that whatever you decide to do, you will bring to it skill, patience, care and the highest standards which you have never compromised. Please accept my thanks for all you have done and my best wishes for a happy and successful future.⁸

Without doubt, my career at the BBC Radiophonic Workshop had come about through a lot of hard work on my part, but was also brought about as result of randomness, serendipity and luck.

It was a sunny winter's day, so I walked on past the station at Maida Vale and on to the Park and the quiet waters of the Serpentine.

References

1. *Email from Brian to Justin Moore, dated 17 June, 2024*
2. *St Leonards Observer, 7 January, 1933*
3. *Worthing Herald, 24 February, 1950*
4. *My Years in the Mildewed Wedding Cake*
<https://whitefiles.org/rwb/>
5. *Ray White's Annual Report*
6. *The BBC Story*
<https://downloads.bbc.co.uk/historyofthebbc/1990s.pdf>
7. *Back-Door Privatisation?*
https://transdiffusion.org/2008/04/08/backdoor_privat/
8. *Letter dated 22 February, 1993*

© Ray White 2025

<https://whitefiles.org/rwi>

For detailed information on the establishment and history of the Radiophonic Workshop you should refer to:

Special Sound: The Creation and Legacy of the Radiophonic Workshop

by Louis Niebur, © 2010 by Oxford University Press

ISBN 978-0-19-536841.