



A History of Knowledge

Piero Scaruffi

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A Brief History of Knowledge

from 3000 BC to 2001 AD



piero scaruffi

A History of Knowledge

Oldest Knowledge

What the Sumerians knew
What the Babylonians knew
What the Hittites knew
What the Persians knew
What the Egyptians knew
What the Indians knew
What the Chinese knew
What the Greeks knew
What the Phoenicians knew
What the Romans knew
What the Barbarians knew

What the Jews knew
What the Christians knew
Tang & Sung China
Medieval India
What the Japanese knew
What the Muslims knew
The Middle Ages
Ming & Manchu China
The Renaissance
The Industrial Age
The Victorian Age
The Modern World

A wooden picture frame with a white background. The frame is made of dark wood with a textured finish. The text is centered within the frame.

This is a free ebook. Needless to say, it took many months to compile it, and the knowledge comes from many years of study.

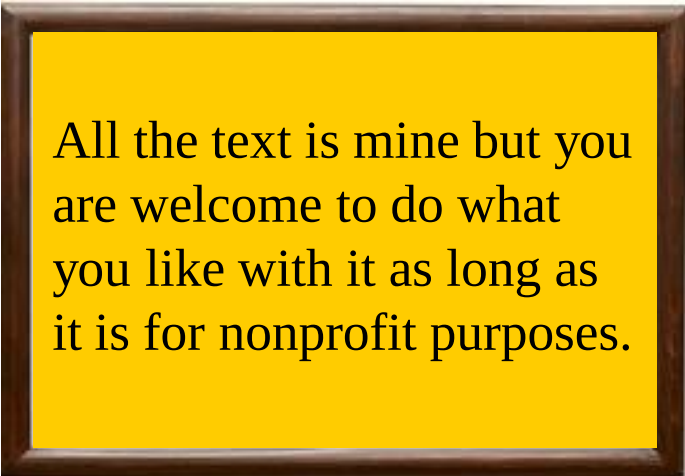
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All the text is mine but you are welcome to do what you like with it as long as it is for nonprofit purposes.



Volunteers welcome to proof-edit and doublecheck the material,
As well as to add more pictures to the texts.

A brief History of Prehistory

Serengeti, Tanzania, where the
history of human civilization began

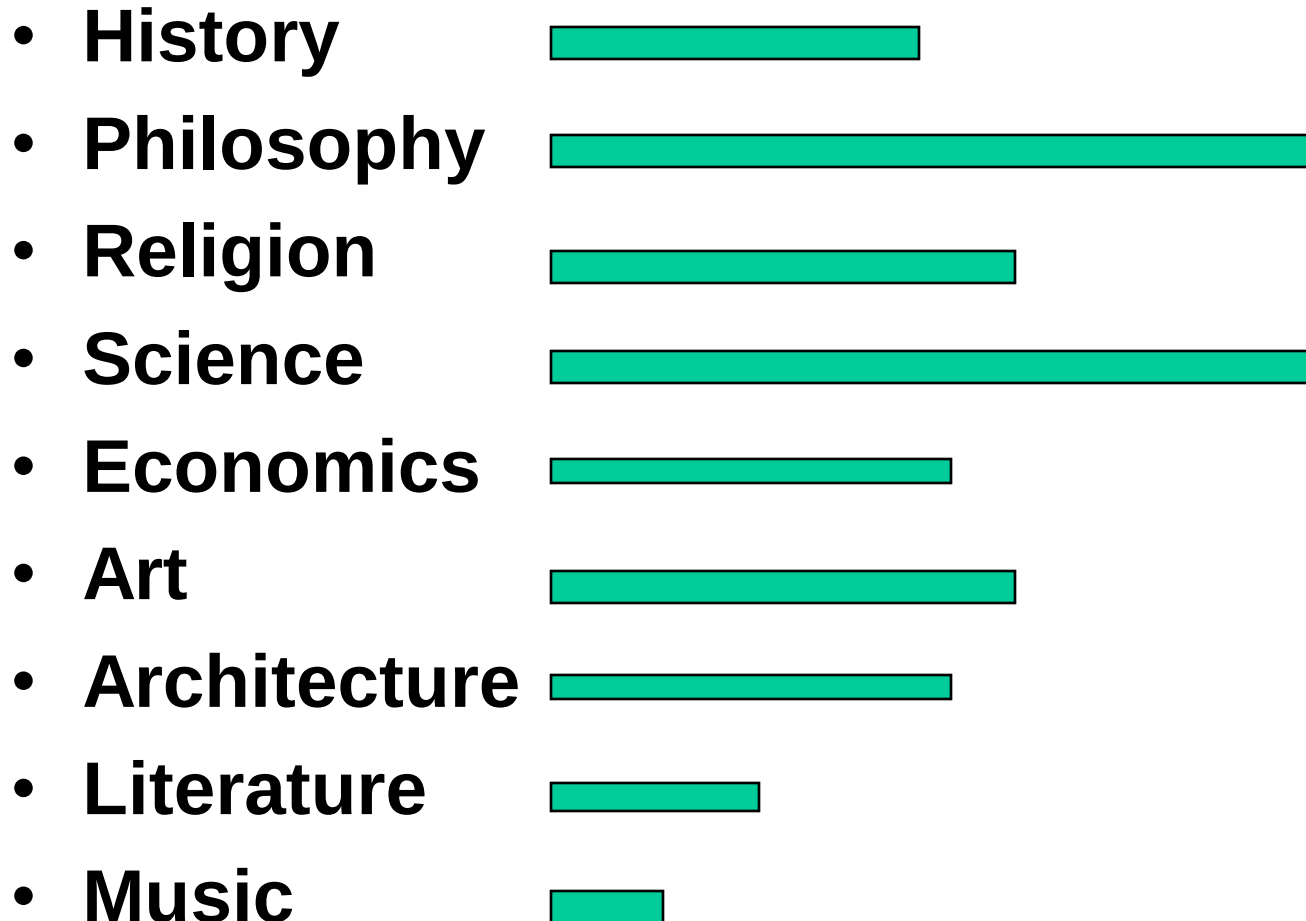


Who I Am



- Piero Scaruffi
 - Degree in Math/Physics (“Scientific” background)
 - Career in Cognitive Science (“Philosophical” background)
 - Career as Music/Cinema/Fiction critic (“Artistic” background)
 - Traveled to 163 countries (“History”)
 - Published more than 20 books
 - Website: www.scaruffi.com

What is this history of knowledge?



Assets

- Interdisciplinary
- Ancient and modern
- Western and eastern
- No single book in print covers this much ground
- Modular
- Emphasis on paradigm shifts

General Bibliography

- William McNeill: A History of the Human Community (1987)
- Charles VanDoren: A History of Knowledge (1991)
- Edward McNall Burns: Western Civilizations (1941)
- Peter Watson: Ideas (2005)
- Mark Kishlansky: Civilization In The West (1995)
- Roberts: Ancient History (1976)
- Lewis Mumford: The City in History (1961)
- Ian McGreal: Great Thinkers of the Eastern World (1995)
- David Cooper: World Philosophies (1996)
- Richard Popkin: The Columbia History of Western Philosophy (1999)
- Mircea Eliade: A History of Religious Ideas (1982)

General Bibliography

- Ian Sutton: Western Architecture (1999)
- Gina Pischel: A World History of Art (1966)
- Spiro Kostof: A History of Architecture (1985)
- Donald Grout: A History of Western Music (1960)
- Geoffrey Hindley: Larousse Encyclopedia of Music (1971)
- John Keegan: A History of Warfare (1993)
- Bernard Comrie: The Atlas Of Languages (1996)

The other half of the story

- See the Appendix: A Herstory of Women

What Prehistoric People knew

- Bibliography:
 - Jared Diamond: “Guns, Germs and Steel” (1997)
 - Dale Guthrie: “The Nature of Paleolithic Art” (2006)

A Brief History of Humans

- 0: The Big Bang
- 200,000,000: The first stars form
- 9,000,000,000: The Sun forms
- 9,050,000,000: The Earth forms
- 9,200,000,000: The oceans and the atmosphere form
- 9,250,000,000: a collision between the Earth and another planet creates the Moon (tides help stabilize weather patterns)

A Brief History of Humans

- 9,700,000,000: Life appears on Earth (sea, lakes)
- 10,700,000,000: Bacteria begin using sunlight to make food from carbon dioxide and water releasing oxygen into the Earth's oceans ("photosynthesis")
- 11,700,000,000: Sex
- 12,900,000,000: Multicellular organisms evolve
- 13,000,000,000: The first nerve cell (neuron) evolves
- 13,100,000,000: The first bilaterian animal evolves
- 13,158,000,000: The Cambrian explosion begins (external skeletons)
- 13,250,000,000: First land plants
- 13,280,000,000: The first land creature

First land creatures



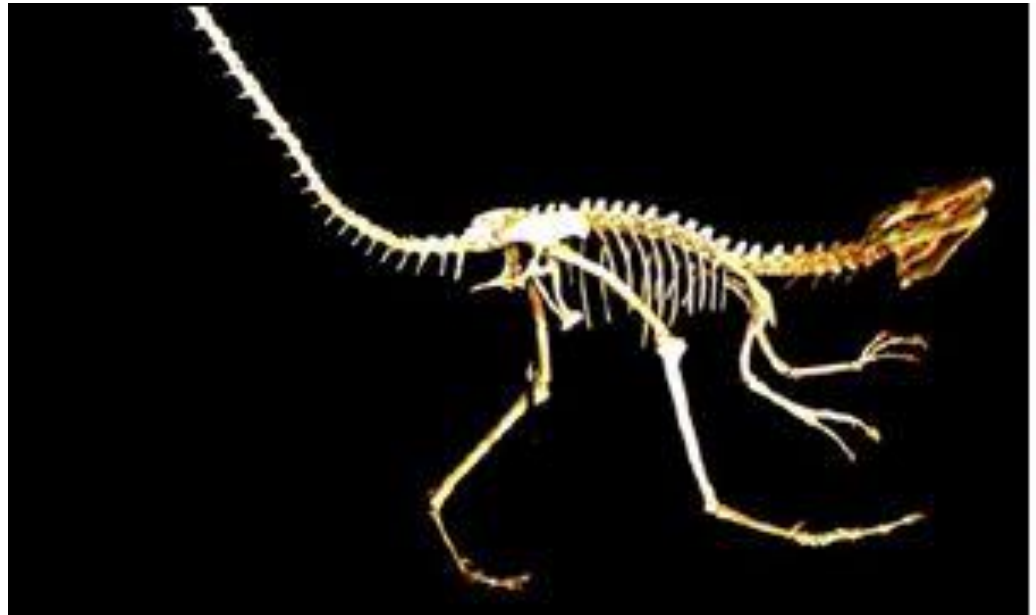
The first land creature
(420 million years ago)[England, 2004]



Morganucodon, 10 cm long - first mammal
(200 million years ago)[England, 1941]



Archaeopteryx, 50 cm wingspan
(150 millions years ago)[Germany, 1860]



Archaeopteryx, 2 m tall - first dinosaur
(240 millions years ago) [Brazil, 2001]

A Brief History of Humans

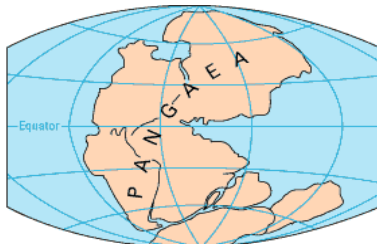
- 13,350,000,000: Pangaea forms
- 13,350,000,000: The first vertebrates (reptiles) live on land
- 13,450,000,000: A volcanic eruption causes the extinction of 90% of Earth species
- 13,470,000,000: Dinosaurs appear

Trilobite slab from Morocco of 500 million years ago



A Brief History of Humans

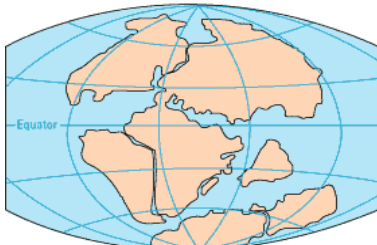
- 13,500,000,000: Antarctica, South America, Africa, India, and Australia are joined in a single continent (Gondwanaland)



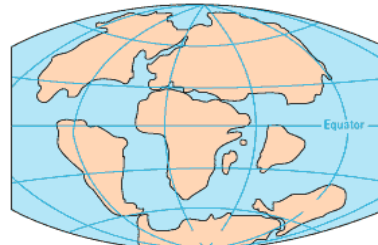
PERMIAN
225 million years ago



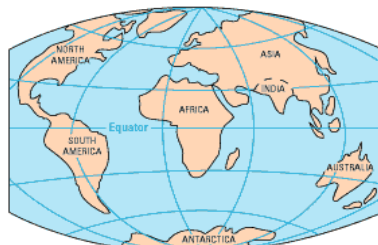
TRIASSIC
200 million years ago



JURASSIC
135 million years ago



CRETACEOUS
65 million years ago



PRESENT DAY

pubs.usgs.gov

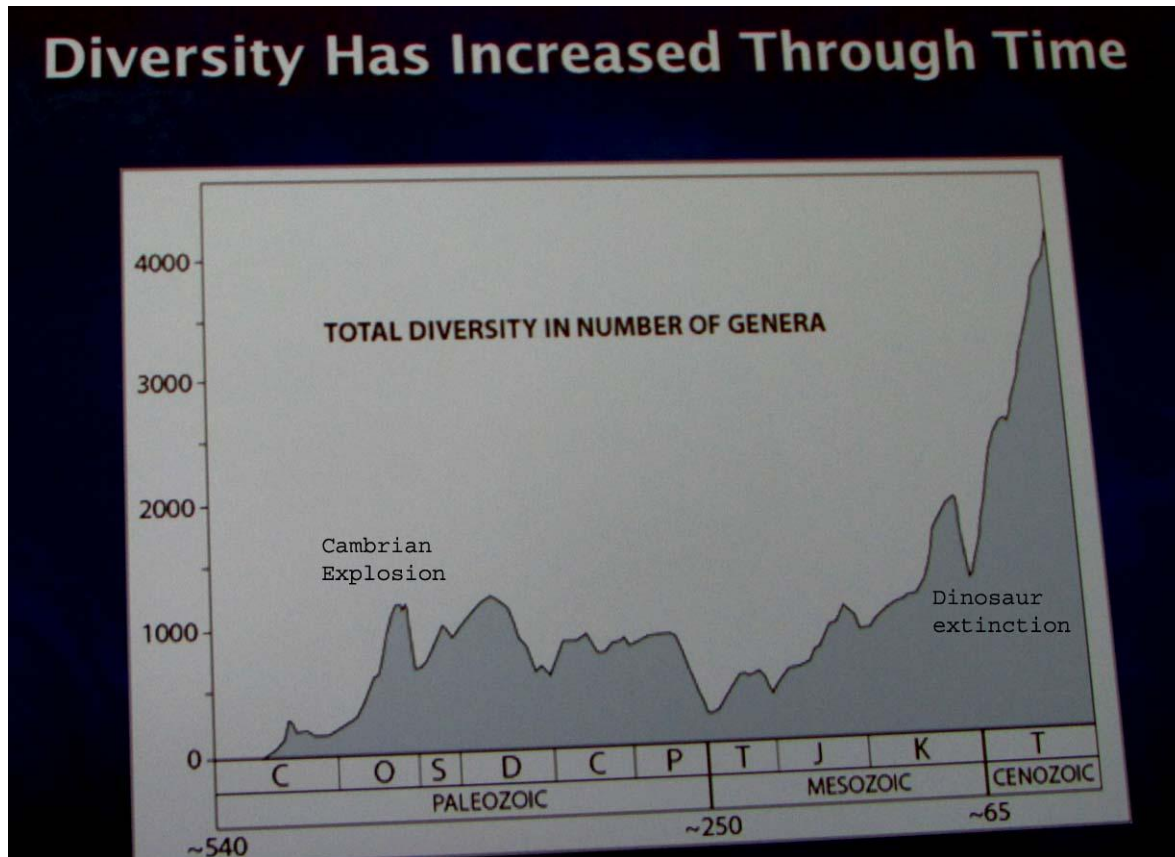
A Brief History of Humans

- 13,500,000,000: Mammals appear (Morganucodon)
- 13,550,000,000: The Archaeopteryx, the link between reptiles and birds
- 13,635,000,000: A meteor over Yucatan (Mexico) causes the extinction of dinosaurs

Asteroid size	Frequency	Damage caused
 25m	Once in 100 years	Explosion in sky - could cause injuries
 140m	Once in 20,000 years	1-2km crater - possible mass casualties
 1,000m	Once in 500,000 years	10km crater - global devastation
 10,000m	Once in 100m-200m years	100km crater - mass extinctions

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- Diversity has increased exponentially



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- 13,640,000,000: Apes appear in Africa
- 13,653,000,000: “Ida”



A Brief History of Humans

- 13,665,000,000: Global cooling
- 13,683,000,000: Apes in Europe
- 13,686,000,000: The **orangutan** diverges from the pre-human species
- 13,690,000,000: European apes move to Africa
- 13,692,500,000: The **gorilla** diverges from the pre-human species
- 13,694,000,000: Apes stand upright (“Millennium ancestor”)
- 13,695,000,000: The **chimpanzee** diverges from the pre-human species
- 13,696,500,000: The first humanoids in Ethiopia (“Lucy”)

“Ardi”

(Ardipithecus Ramidus)

4.4 million years



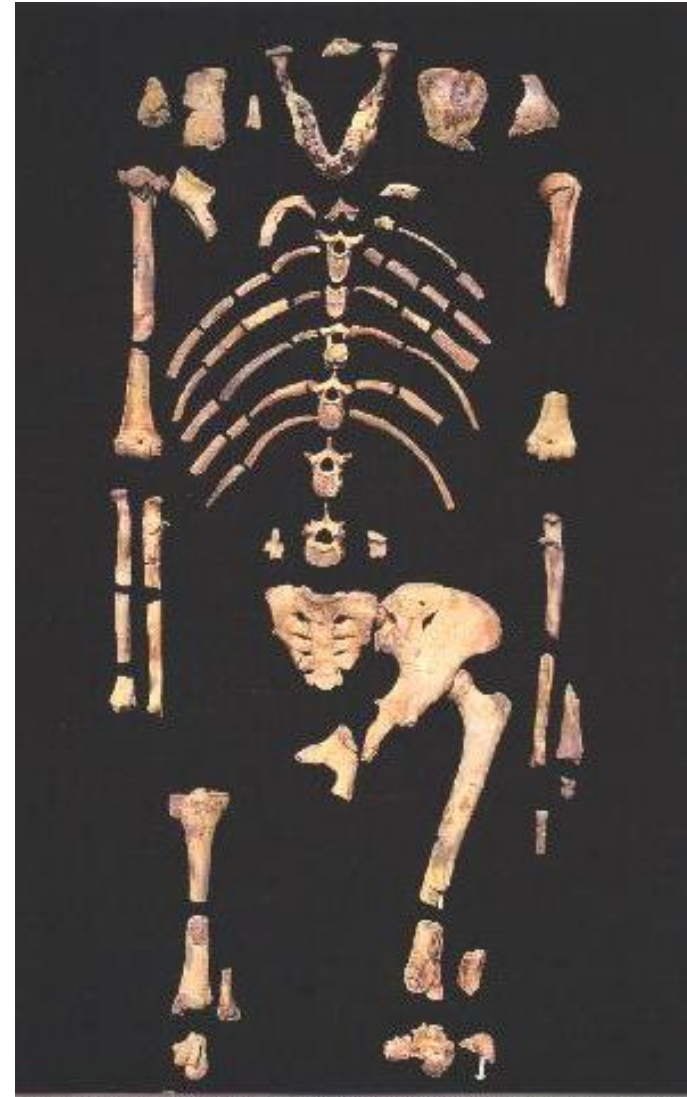
“Little Foot”

(*Australopithecus africanus*,
3.6 million years)



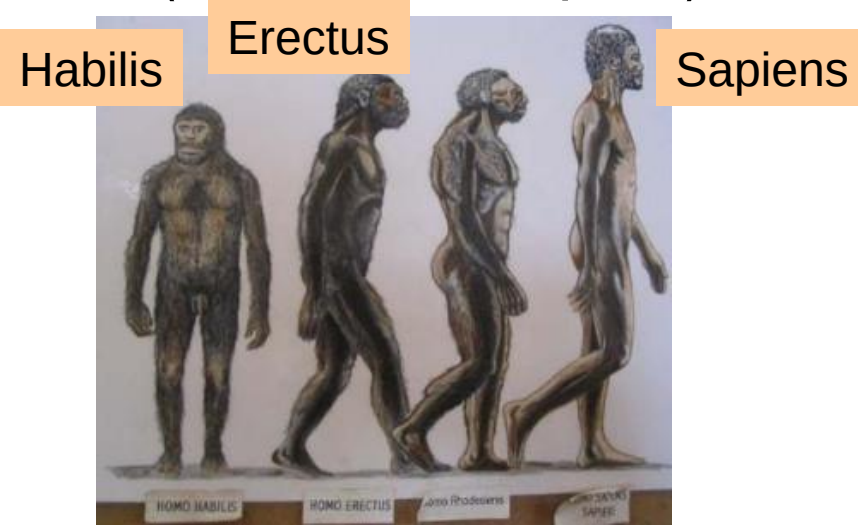
“Lucy”

(*Australopithecus afarensis*,
3 to 3.7 million years)



A Brief History of Humans

- 13,696,800,000: The first glaciers, fluctuating climate
- 13,697,400,000: Hominids eat meat
- 13,696,700,000: Oldest stone tools (Lake Tarkana)
- 13,698,000,000: **Homo Habilis** appears (tools)
- 13,698,100,000: Hominids “invent” fire
- 13,698,200,000: **Homo Erectus** spreads to Europe and Asia
- 13,699,250,000: Homo Erectus reaches Java (“Pithecanthropus”)

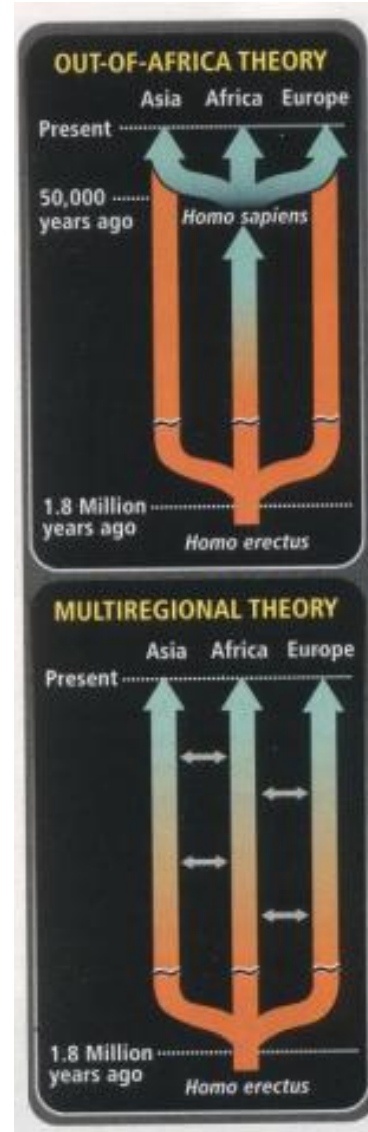


The Extension of Homo Erectus



A Brief History of Humans

- 13,699,500,000: The world's population is about 5,000
- 13,699,620,000: The first buildings in Europe (Terra Amata)
- 13,699,750,000: **Homo Sapiens** evolves in Africa
- 13,699,850,000: **Home Sapiens Sapiens** evolves in Africa (“Eve”, mother of all current humans)



Today's date: year 13,700,000,000

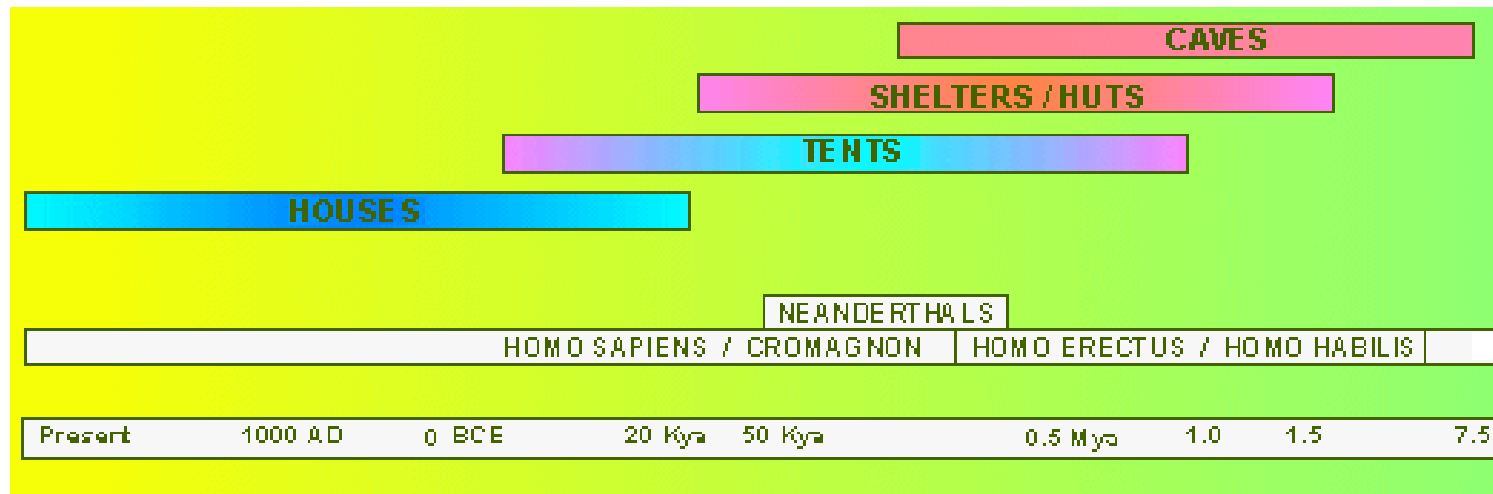
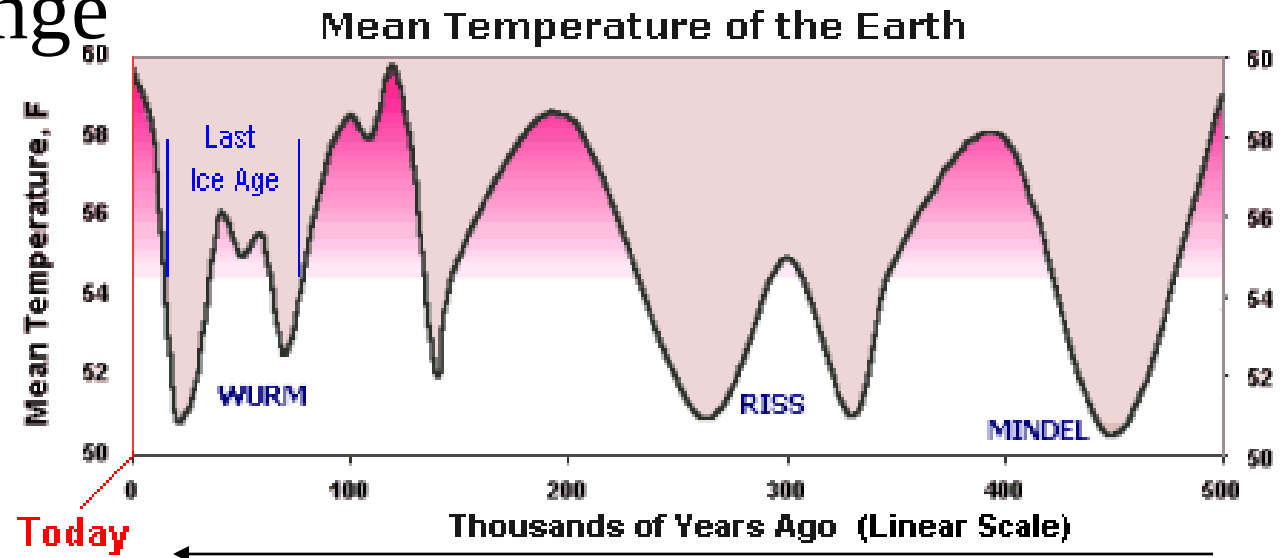
A Brief History of Humans

- **Terra Amata's huts**



A Brief History of Humans

- Climate change



(<http://www.personal.psu.edu/users/w/x/wxk116/habitat/>)

A Brief History of Humans

- 13,699,882,000: Würms glaciation (“Ice Age”)
- 13,699,900,000: Neanderthal Men in Europe
- 13,699,926,000: Eruption of Toba volcano (separation of races?)
- 13,699,930,000: Neanderthal Men bury their dead

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Neanderthal inscriptions



Neanderthal “art”

Sapiens meets Neanderthal



And Neanderthals chase Sapiens north to Europe

31

Today's date: year 13,700,000,000

A Brief History of Humans

- 13,699,940,000: “Adam” is born in Africa
- 13,699,960,000: Homo Sapiens Sapiens spreads to Eurasia (e.g., Cro-Magnon in southern Europe)
- 13,699,960,000: Cro-Magnon in Europe (tools, clothes, jewelry, art, weapons)
- 13,699,972,000: Neanderthal Men disappears

A Brief History of Humans



Oldest remains of Homo Sapiens Sapiens ever found (Ethiopia, Omo River, 1967), dating from 195,000 years ago



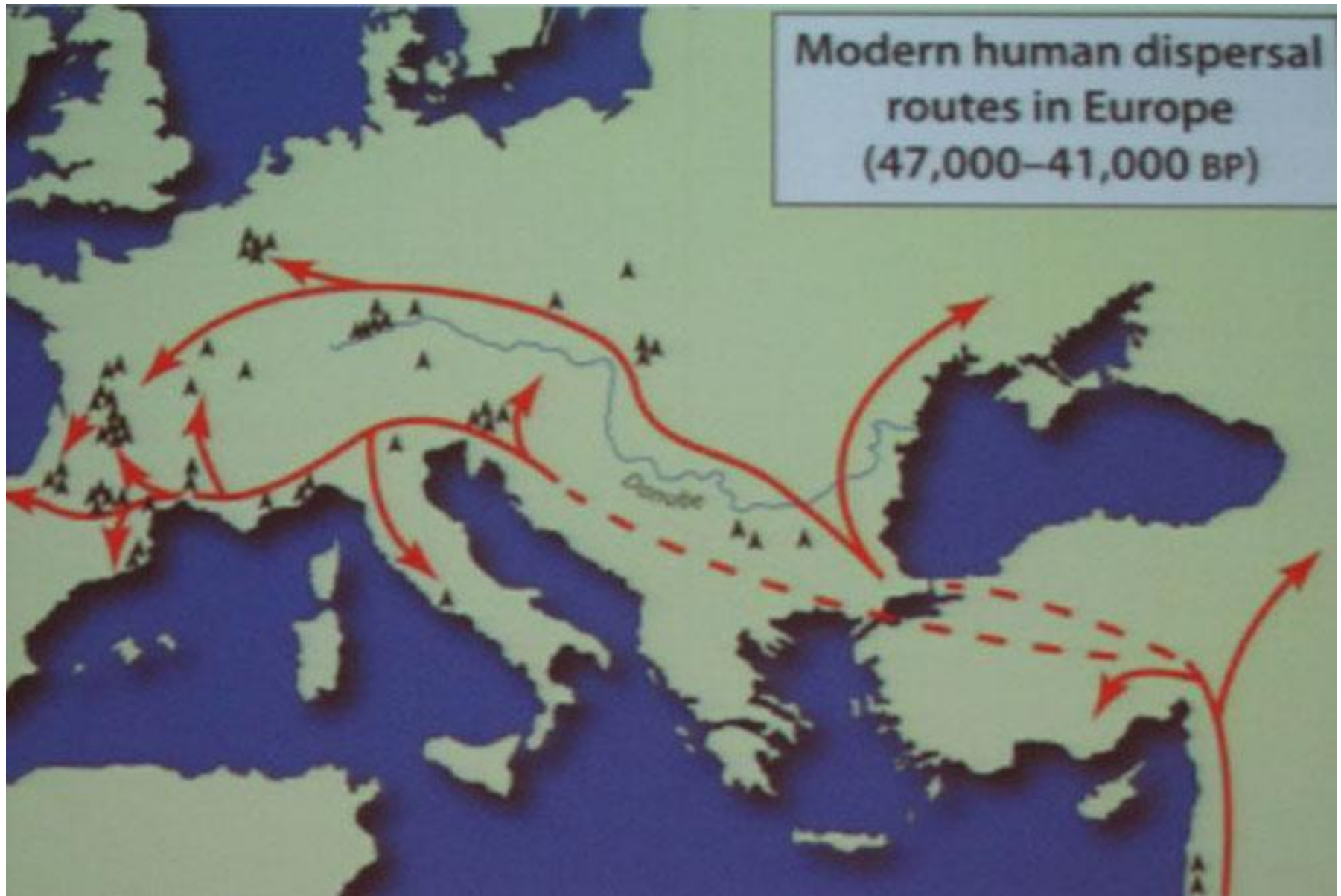
The Hominid Family Tree

Neanderthal men

Neander Tal,
Germany (Bonn
Museum)



The Hominid Family Tree



The Hominid Family Tree

Orrorin tugenensis (6 mya)

Ardipithecus ramidus (4.4 mya)

Australopithecus anamensis (4.2 to 3.9 mya)

Australopithecus afarensis (3.6 to 2.9 mya)

Kenyanthropus platyops (3.5 to 3.3 mya)

Australopithecus africanus (3 to 2 mya)

Australopithecus aethiopicus (2.7 to 2.3 mya)

Australopithecus garhi (2.5 mya)

Australopithecus boisei (2.3 to 1.4 mya)

Homo habilis (2.3 to 1.6 mya)

Homo erectus (1.8 to 0.3 mya)

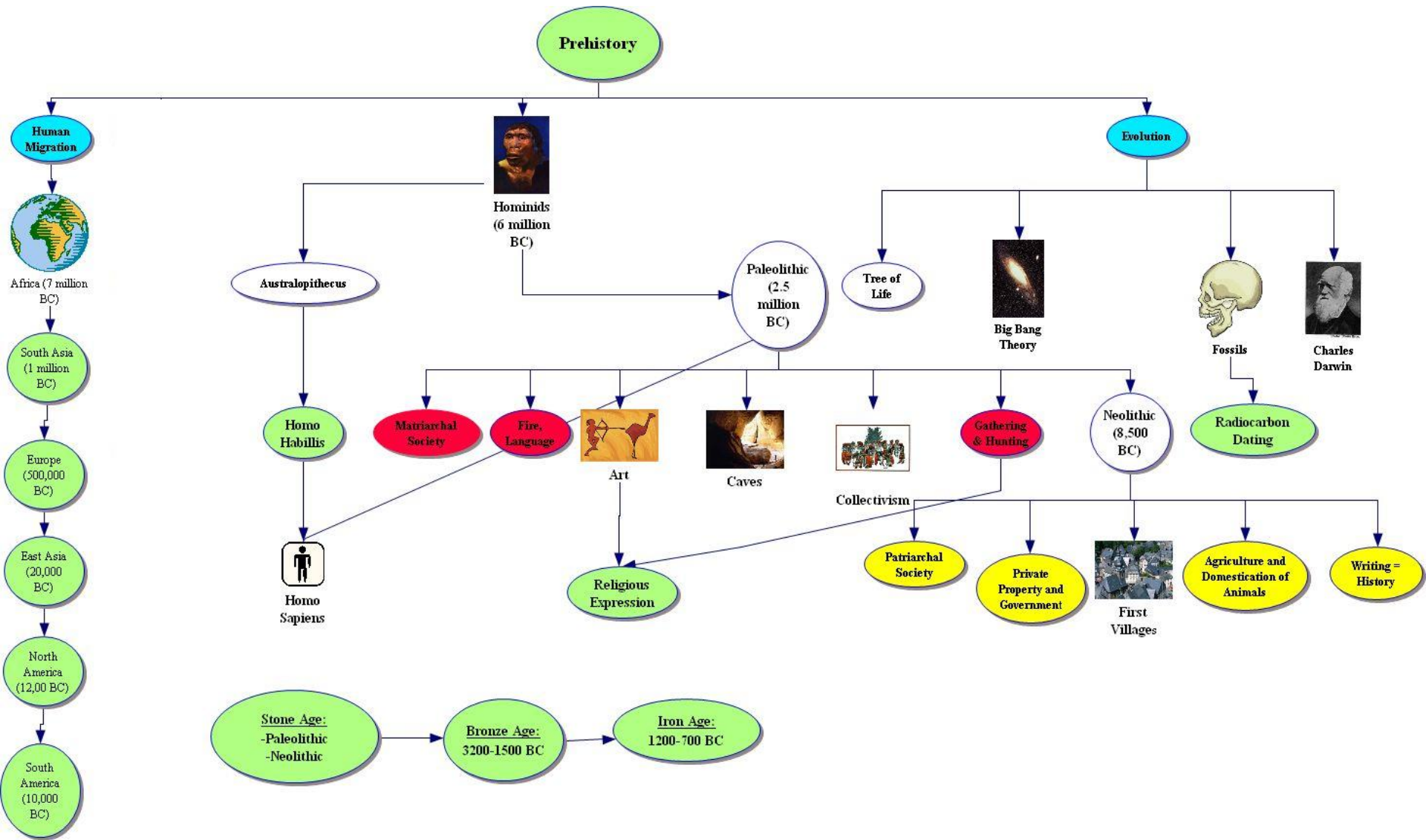
Australopithecus robustus (1.8 to 1.5 mya)

Homo heidelbergensis (600 to 100 tya)

Homo neanderthalensis (250 to 30 tya)

Homo sapiens (100 tya to present)

The Hominid Family Tree



(Smithsonian)

A Brief History of Humans

- 13,699,970,000: cave dwellers sculpt the statue of a woman (Willendorf, Austria) and cave dwellers sculpt figurines (Hohle Fels Cave, Southwestern Germany)
- 13,699,981,000: Oldest lamp (France)
- 13,699,983,000: Cave dwellers paint animals on the walls (Lascaux, France)

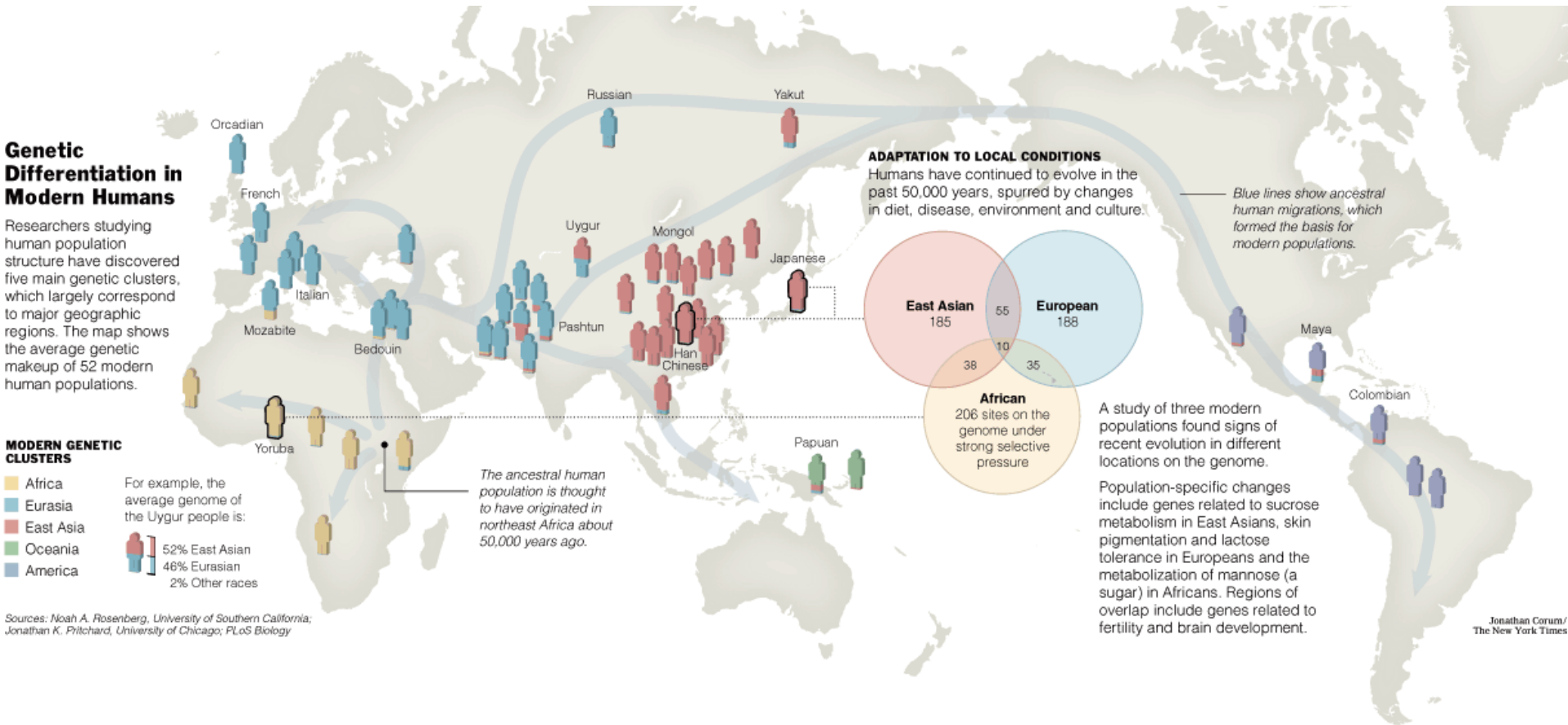
A Brief History of Humans

- 13,699,985,000: **End of the Ice Age (Holocene) - ice retreats**
- 13,699,986,000: Humans cross the Bering Strait and begin populating America



Today's date: year **13,700,000,000**

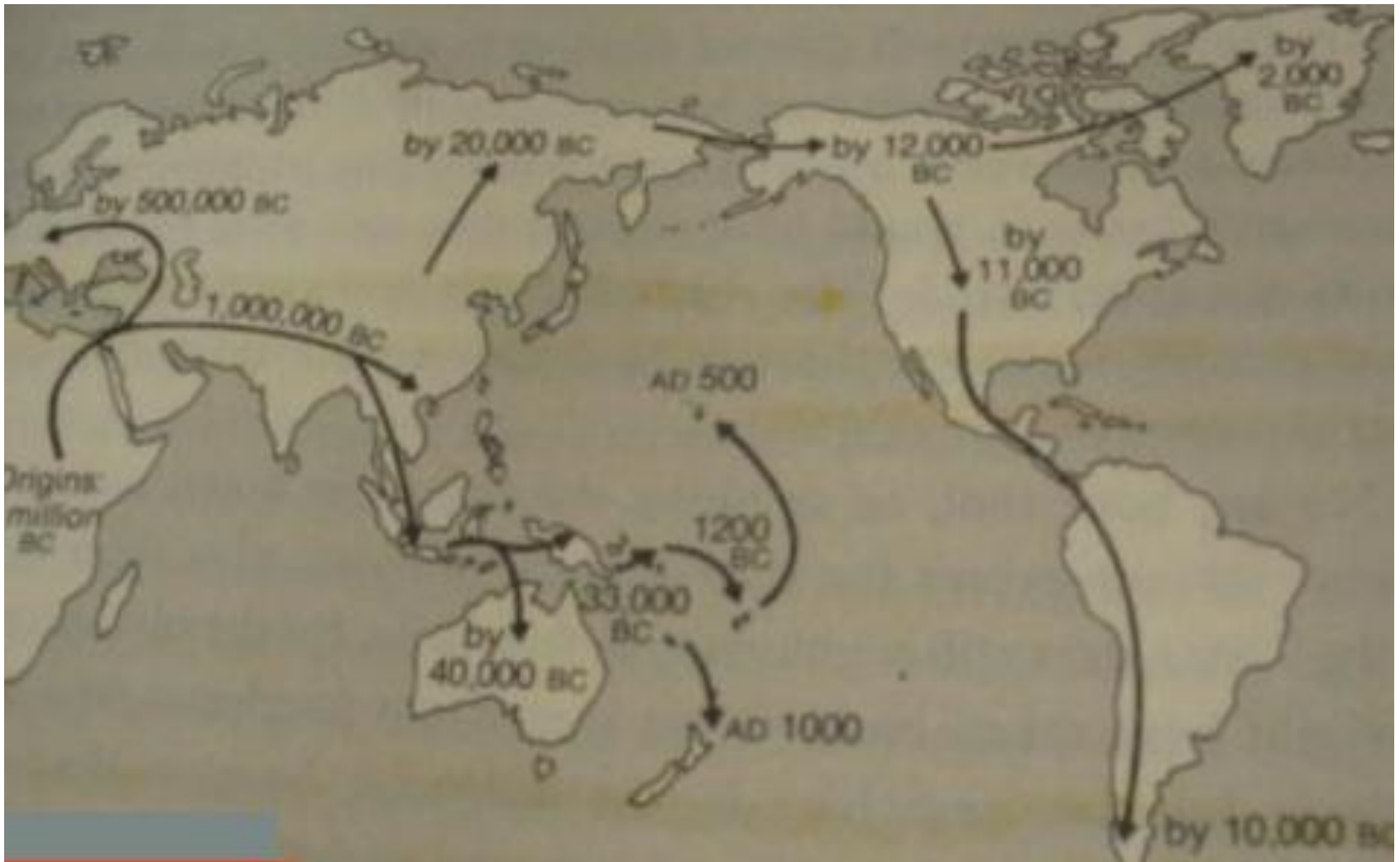
A Brief History of Humans



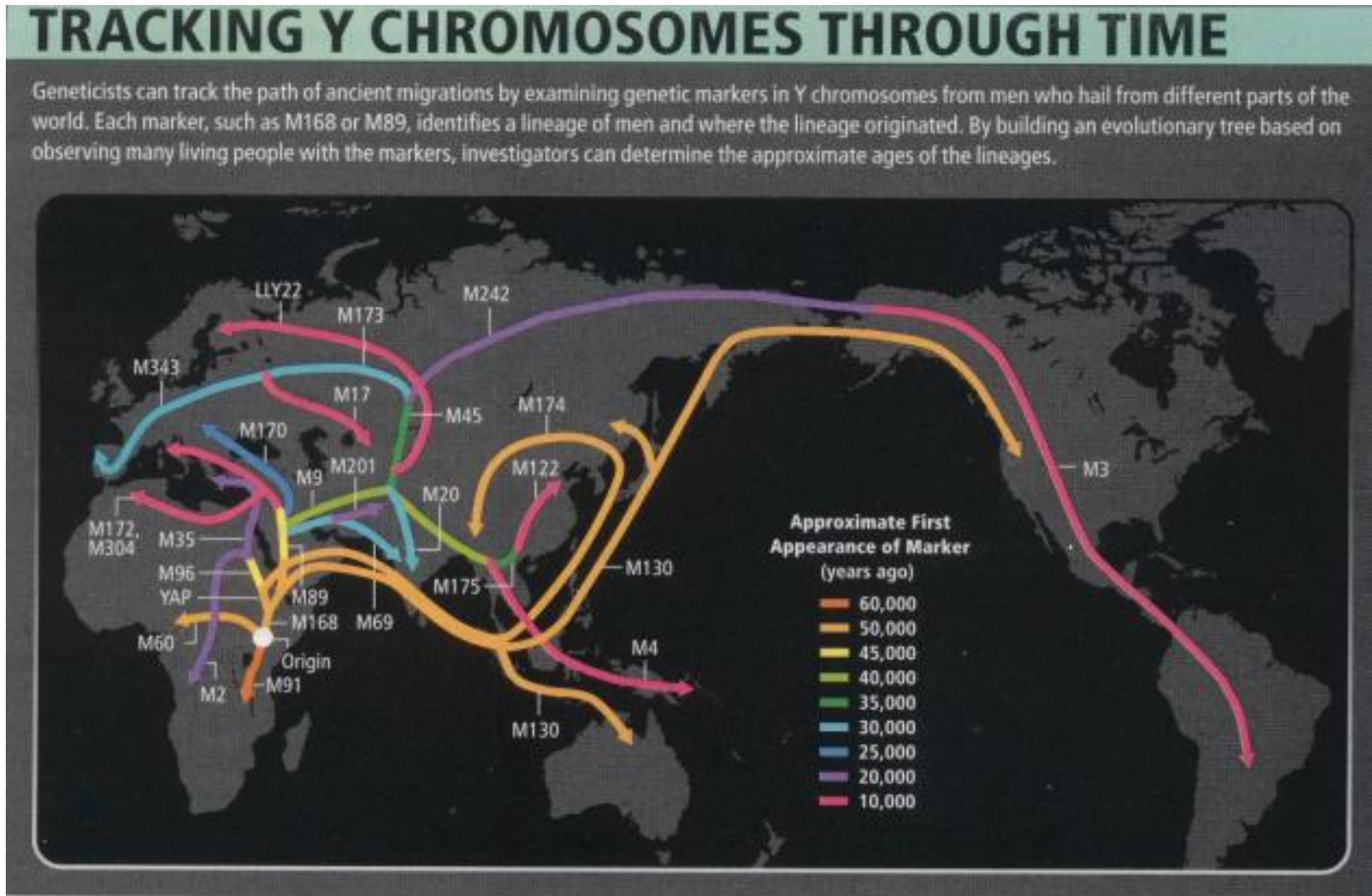
Sources: Noah A. Rosenberg, University of Southern California; Jonathan K. Pritchard, University of Chicago; PLoS Biology

Jonathan Corum/
The New York Times

A Brief History of Humans



A Brief History of Humans

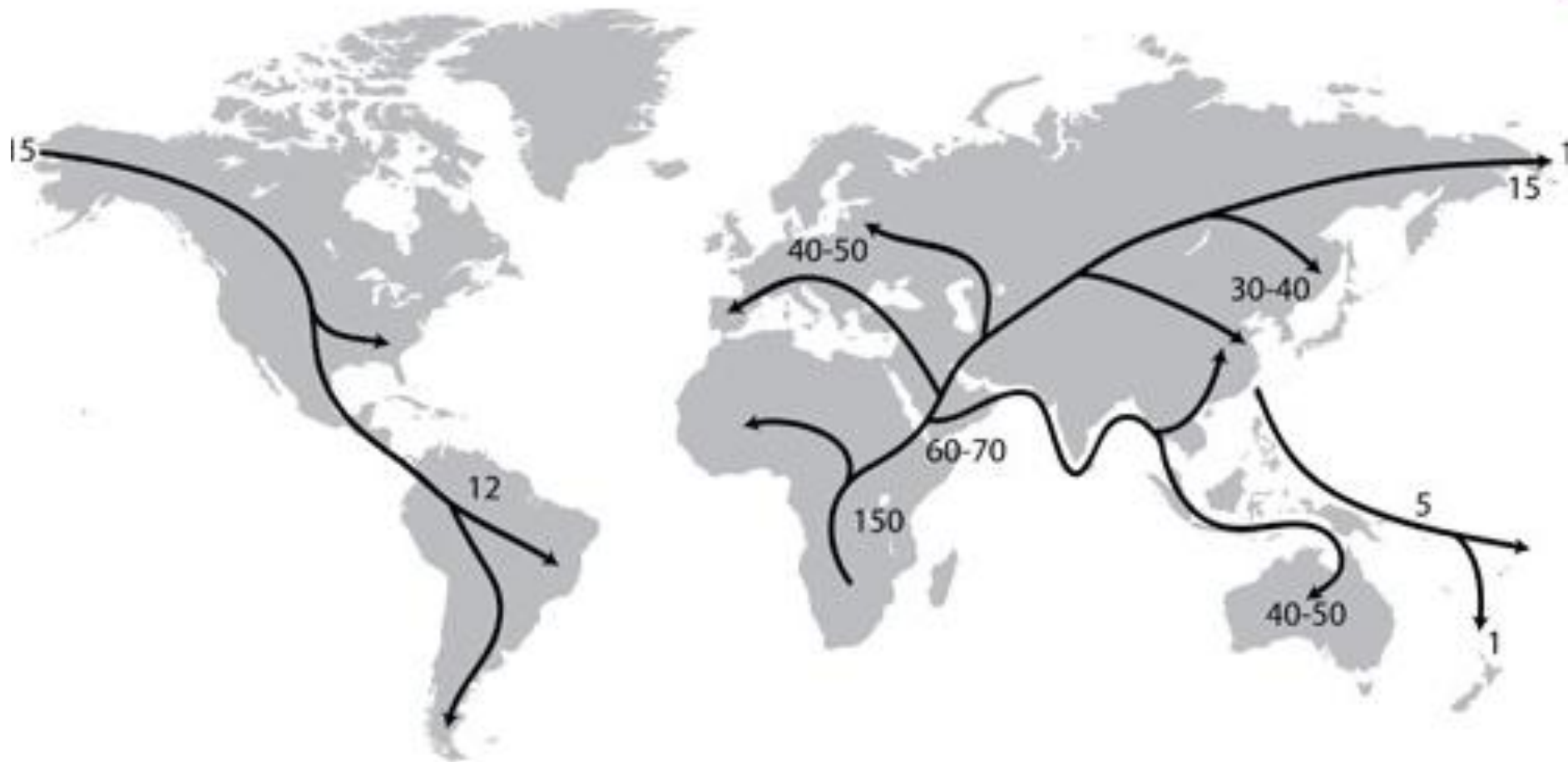


(Scientific American, June 2008)

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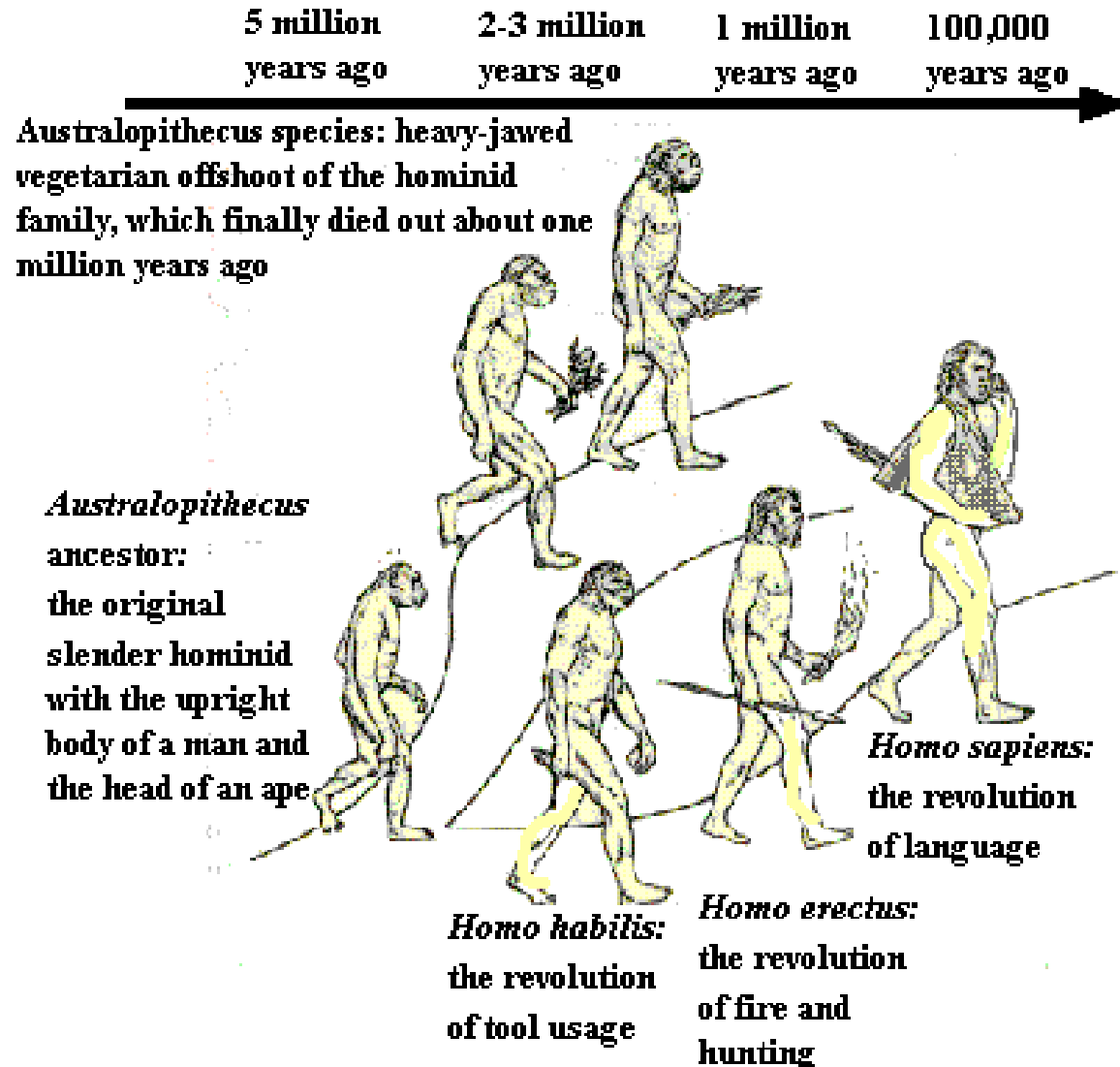
Today's date: year 13,700,000,000

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(thousands of years)

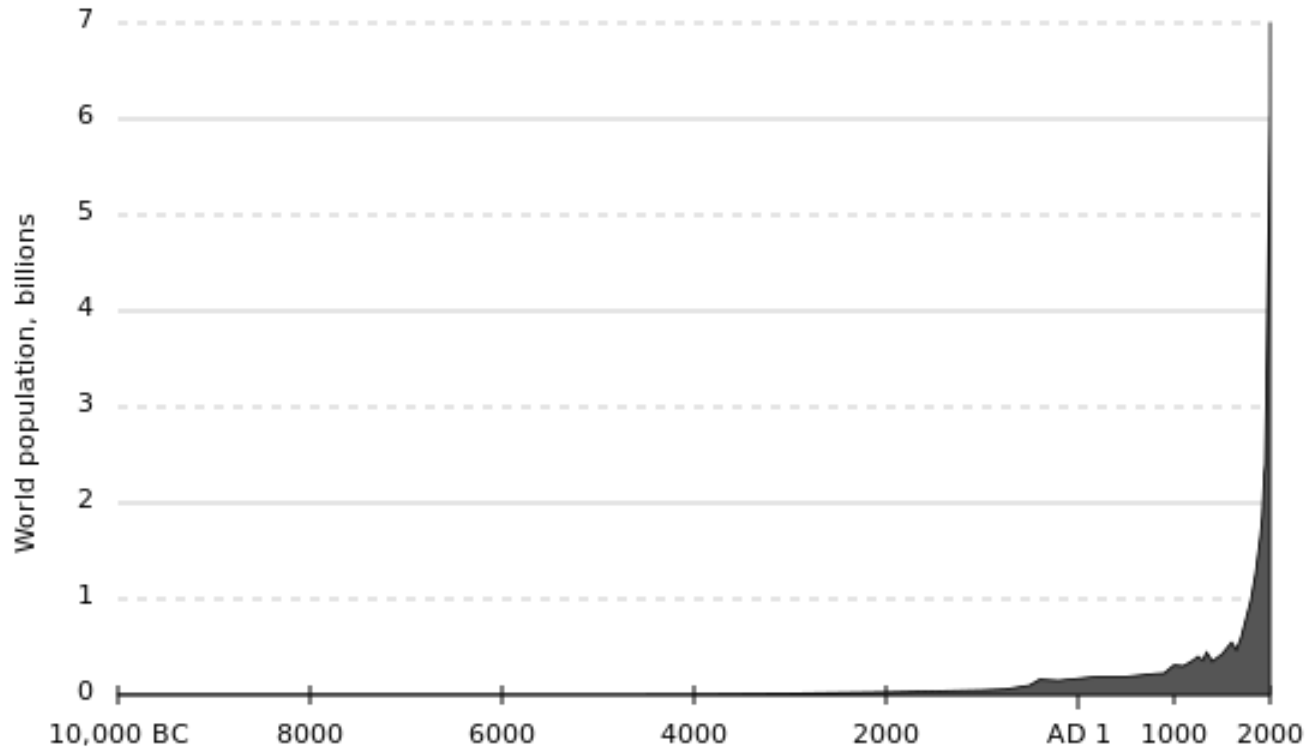
A Brief History of Humans



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DRD4 7R, a gene variant that emerged about 40,000 years ago and is carried by 20% of Homo Sapiens, is associated with novelty-seeking, extroversion and hyperactivity.

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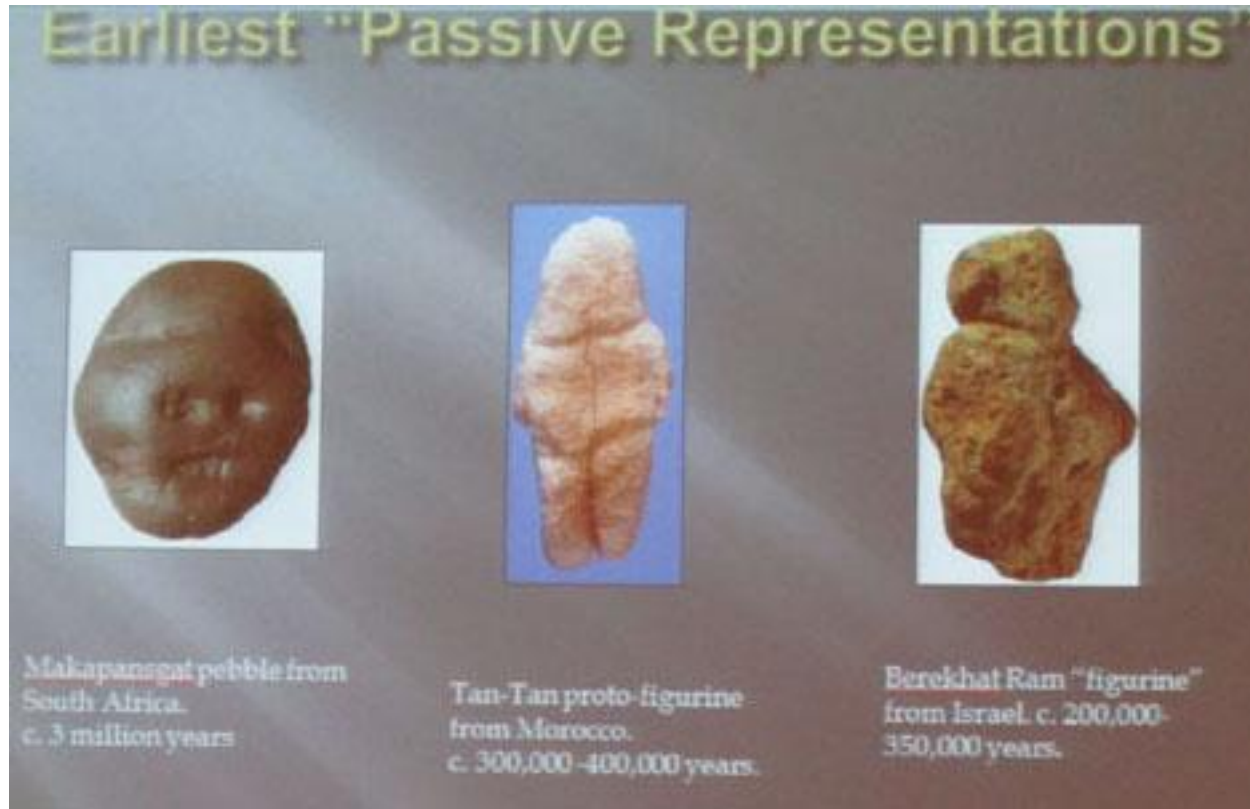


Human population over the millennia

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Earliest "art"

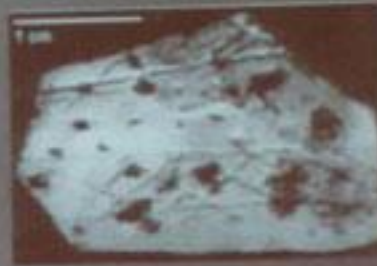
First Marks



Tesler et al. 2013 J. Arch. Sci.
From 100,00 to 55,000 BP



Engravings on ochre blocks c.
77,000 BP d'Errico et al 2003. J.
World Prehist.



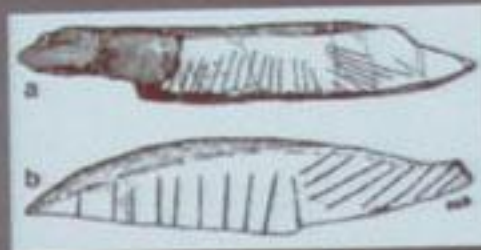
Engraving on ostrich
eggshell from Patne India
c. 25,000 BP (Bednarik
2003)



Lascaux, France.
c. 17,000 BP



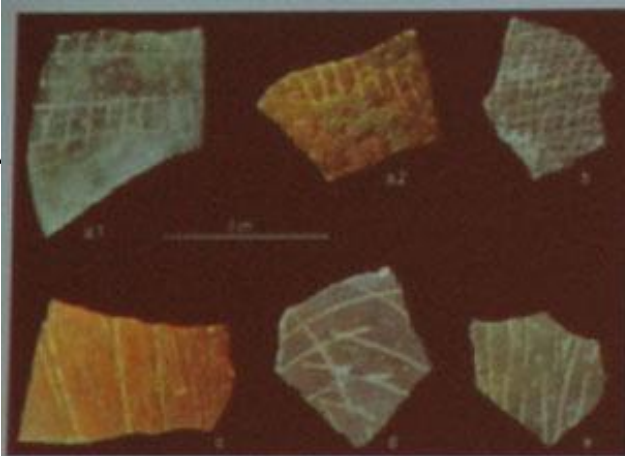
cupules in the Daraki-Chattan Cave,
India (Kumar et al. 2003. 200,000 BP).



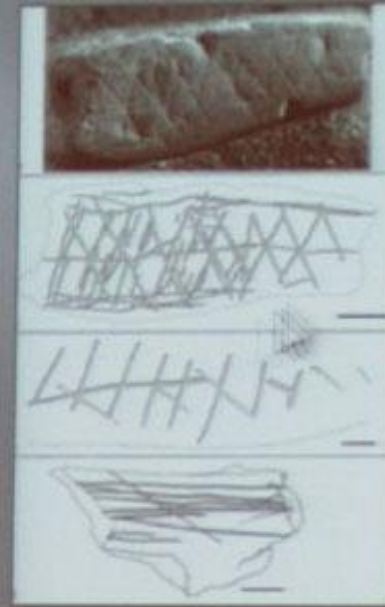
Two pieces of engraved
bone from Bilzingsleben,
Germany c. 350,000 BP
(Bednarik, 2003).



Zigzag motif on bone from
Bacho Kiro, Bulgaria
(Middle Palaeolithic)



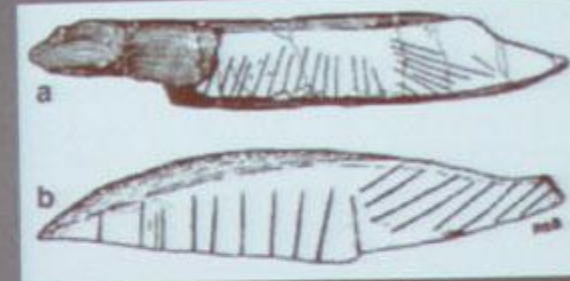
Texier et al. 2013 J. Arch. Sci.
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World Prehist.



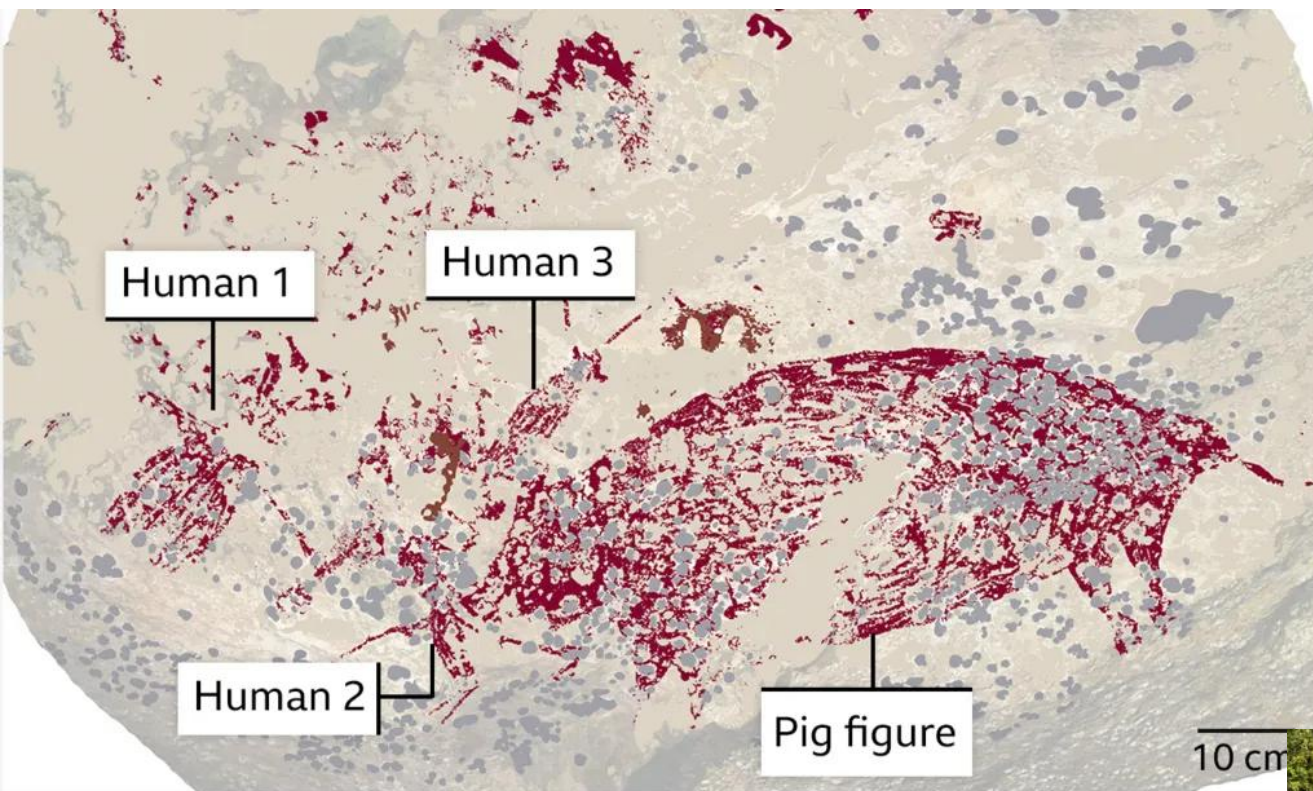
Cupules in the Daraki-Chattan Cave,
India (Kumar et al. 2003. 200,000 BP).



Two pieces of engraved
bone from Bilzingsleben,
Germany c. 350,000 BP
(Bednarik, 2003).

First marks

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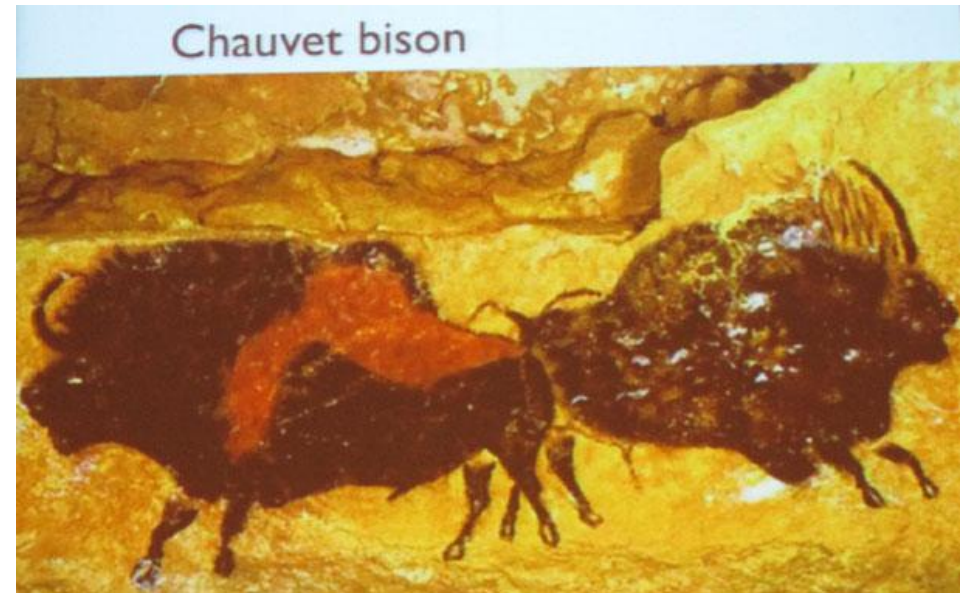
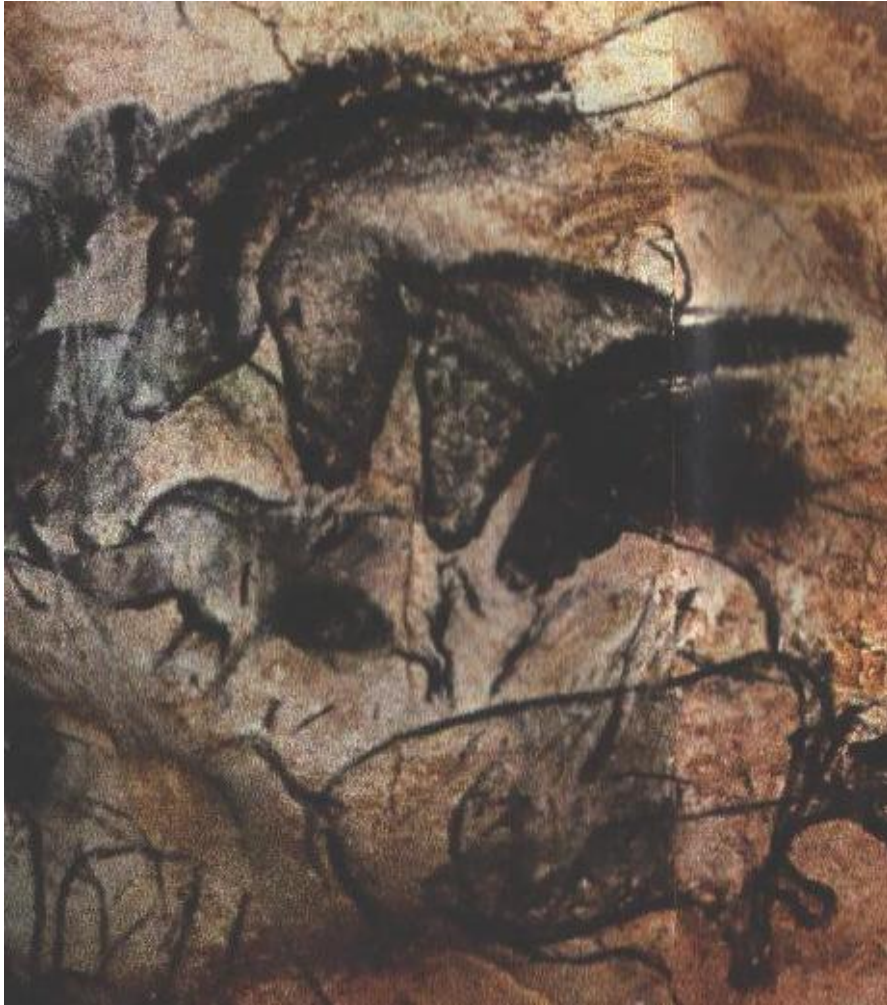
Caves of Karampuang Hill, Sulawesi, Indonesia 50,000 BC

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Sumpang Bitu cave in South Sulawesi , Indonesia 37,000 BC

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Chauvet Cave, France, 35,000 BC (National Geographic)

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Sulawesi, Indonesia, 38,000 -27,000 BC
(The inhabitants painted in the caves for at least 13,000 years)

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The Löwenmensch
from Hohlenstein-
Stadel

2013 reconstruction



Venere di
Savignano

Museo nazionale
preistorico
etnografico Luigi
Pigorini a Roma

35,000 years?



Grotta di Fumane

A Brief History of Humans



Phallus sculpture from Hohle Fels Cave
near Ulm, Germany

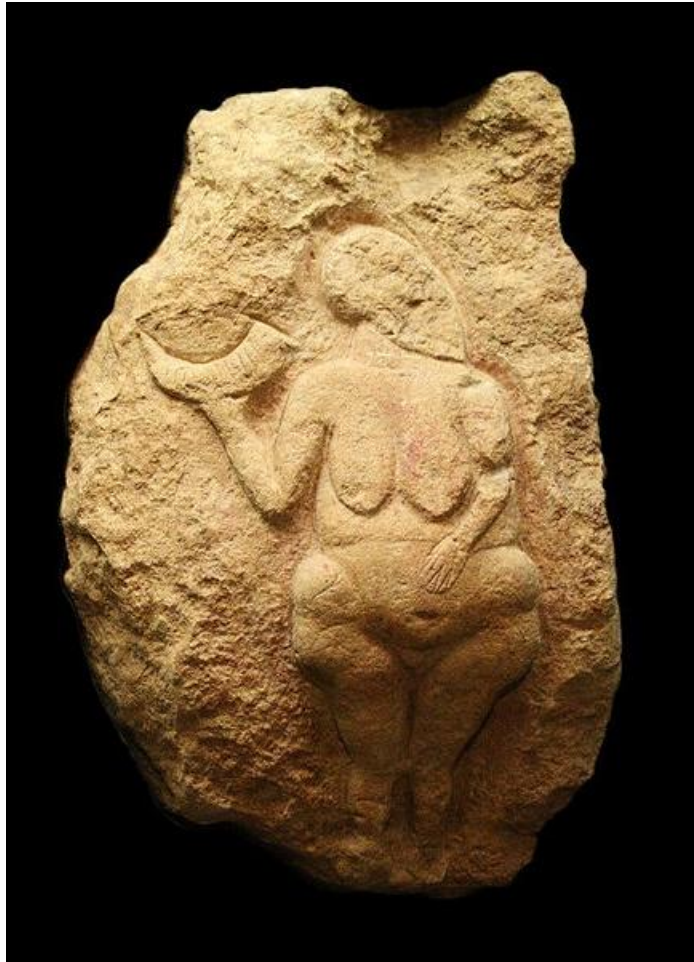


Willendorf, Austria (28,000 BC)

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Lion Man (Germany, 30,000 BC)



Venus of Laussel (France, 23,000 BC)



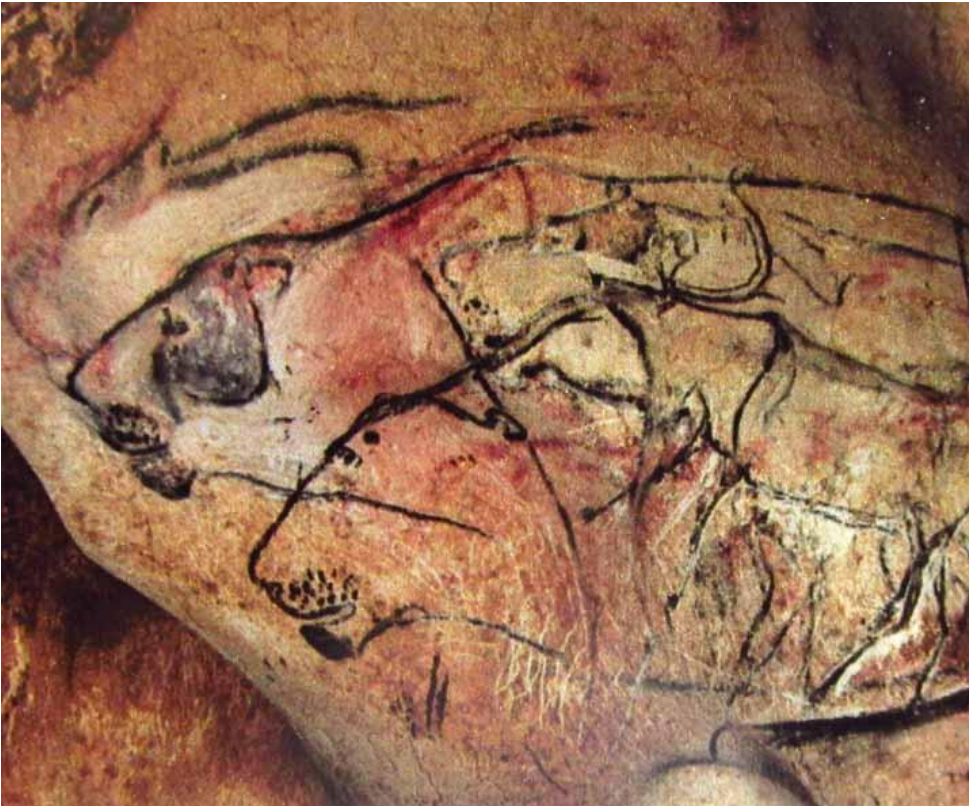
Bone flute (Germany, 33,000 BC)

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Ivory lion head from Vogelherd, Germany (35,000 BC)

Painting from Chauvet, France (36,000 BC)

Figurine from Hohle Fels, Germany (35,000)



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Ivory bison from Zaraysk, Russia (20,000 BC)

Venus of Dolni, Czech (26,000 BC)

Ivory head of Dolni, Czech (26,000 BC)

Brassempouy, France (25,000 BC)



A Brief History of Humans

- Cave art does not appear until 21,000 BC
- First cave art: carved vulva images
- Most popular subject: mammoths (eg Rouffignac, 20,000 BC)
- Peak of wall painting: 18,000-10,000 BC
- First polychrome painting: 16,000 BC (Les Trois Freres)



Lascaux Cave (17,000-10,000 BC)



Very
sketchy
human



Very
detailed
animal



Altamira Cave, Spain (14,000-9,500 BC)



Cogul Cave, Spain (10,000): Nine women and animals



Aleppo, Syria (9,000 BC)



Djade al-Mughara, near Aleppo, Syria (discovered in 2007, 2 sq-meter)

A Brief History of Humans

Historical Estimates of World Population

(Population in millions.

When lower and upper estimates are the same,
they are shown under "Lower")

Source: <http://www.census.gov>

Year	Summary	
	Lower	Upper
-10000	1	10
-8000	5	
-6500	5	10
-5000	5	20
-4000	7	
-3000	14	
-2000	27	
-1000	50	
-500	100	
-400	162	
-200	150	231
1	170	400

A Brief History of Humans

- 13,699,986,000: Transition from hunting-gathering to agriculture
- 13,699,988,000: First towns in Mesopotamia
- 13,699,990,000: The world's population is 1-10 million
- 13,699,994,000: Stable weather patterns (seasons)
- 13,699,994,300: The Egyptians
- 13,699,995,000: Mass migration of nomadic herders from the steppes of eastern Ukraine and southern Russia into Europe destroy existing communities of hunter-gatherers and early farmers (David Reich: “Massive Migration From the Steppe Was a Source for Indo-European Languages in Europe”, 2015)

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- 13,699,996,000: The Chinese empire
- 13,699,998,000: The Roman empire
- 13,699,999,776: The USA
- 13,700,000,000 (today): The world's population is 7 billion
- ...
- 17,403,588,402: The Sun dies
- 17,700,000,000: Milky Way collides with M31 in Andromeda

A Brief History of Humans



Causes of Paradigm Shifts

1. Nature (climate)
2. Demographics (population)
3. Technology (inventions)
3. Economics (flow of goods and services)
3. Culture (prophets, philosophers, writers, painters, architects, ...)
4. Politics (individuals, e.g. kings, revolutionaries, presidents...)

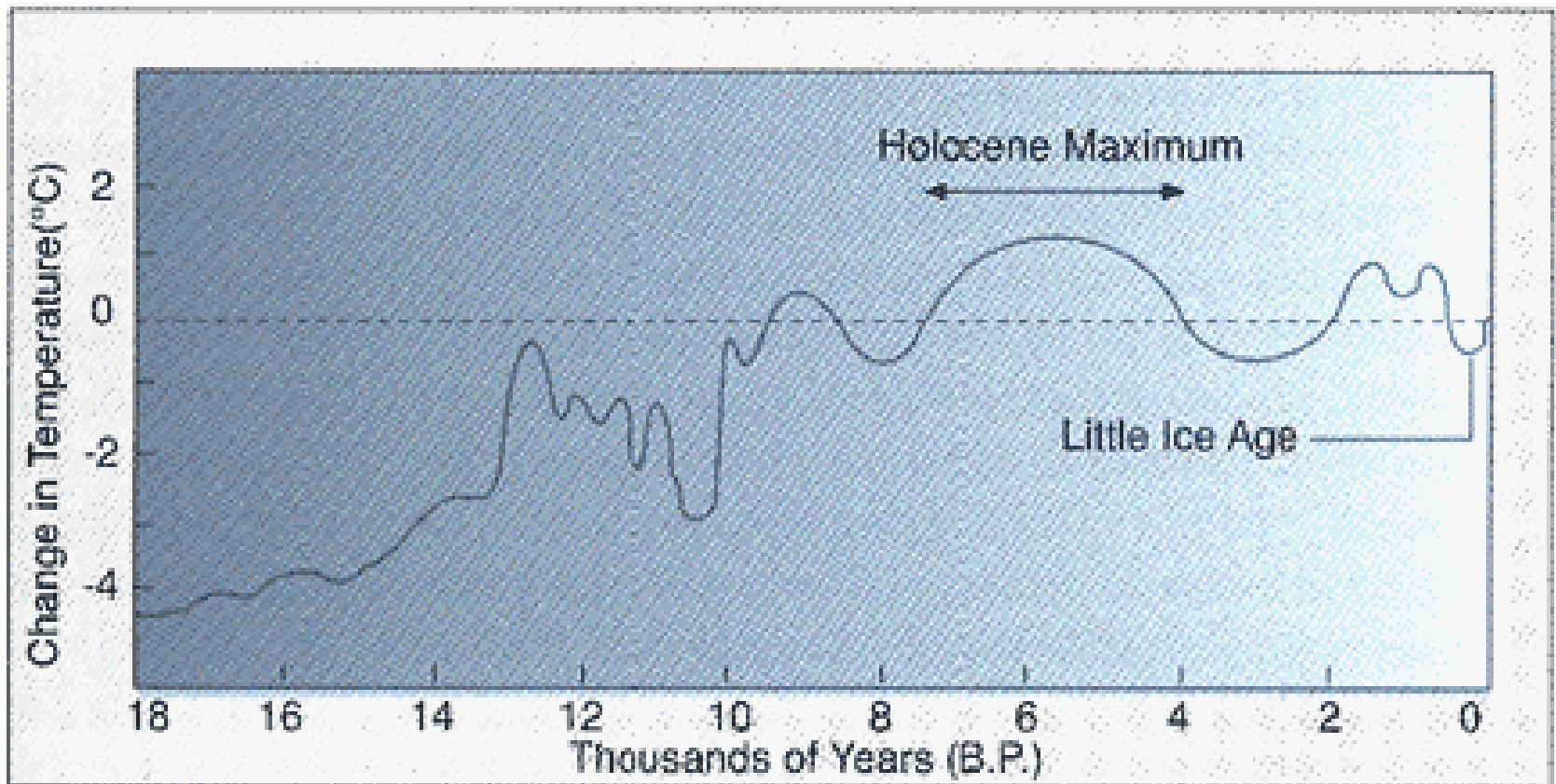
Causes of Paradigm Shifts

Climatic patterns cause population patterns which cause both conflict and innovation, which in turn cause other population patterns.

Conflicts are interaction of populations, which are often resolved by superior technology and propagate the superior technology.

Causes of Paradigm Shifts

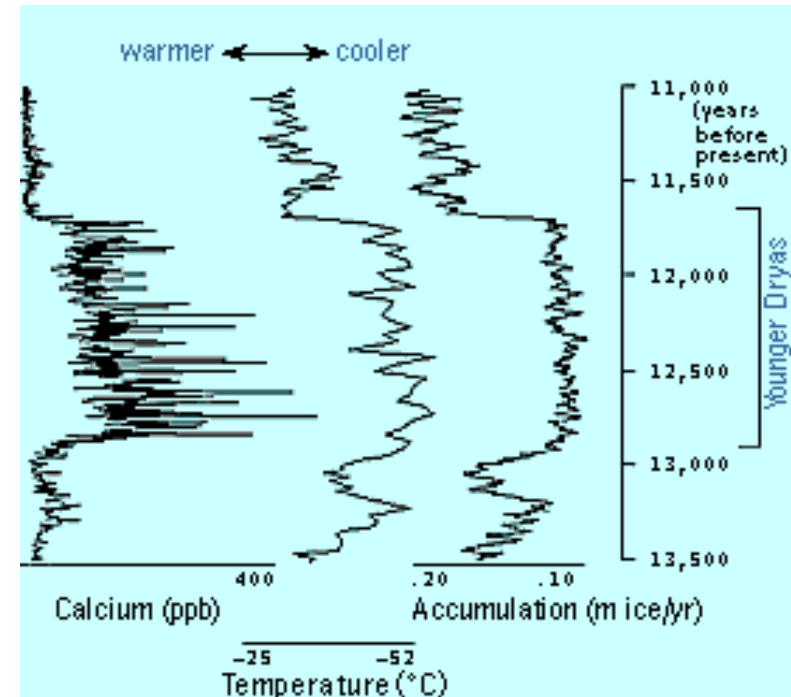
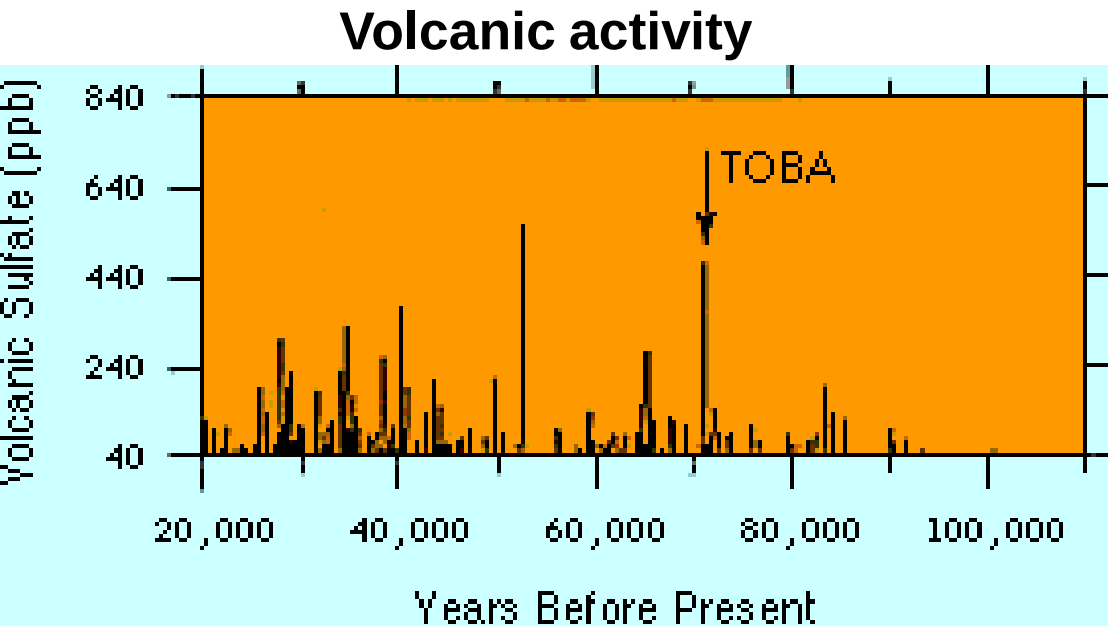
Climate change/ temperature increase



Causes of Paradigm Shifts

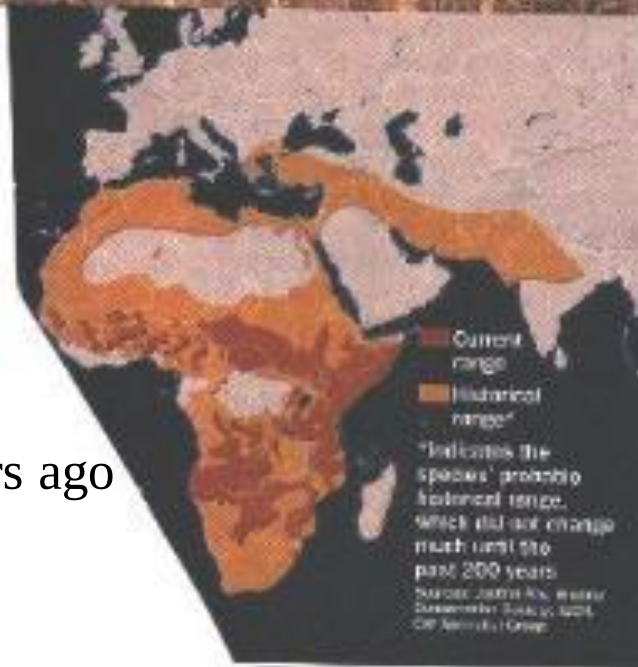
- Rapid climate change
 - Climate can shift with frightening speed. One such jump occurred about 12,000 years ago. In less than five years average temperatures plunged by about 15°C. The Younger Dryas lasted about 1,300 years before it ended just as abruptly.

Younger Dryas



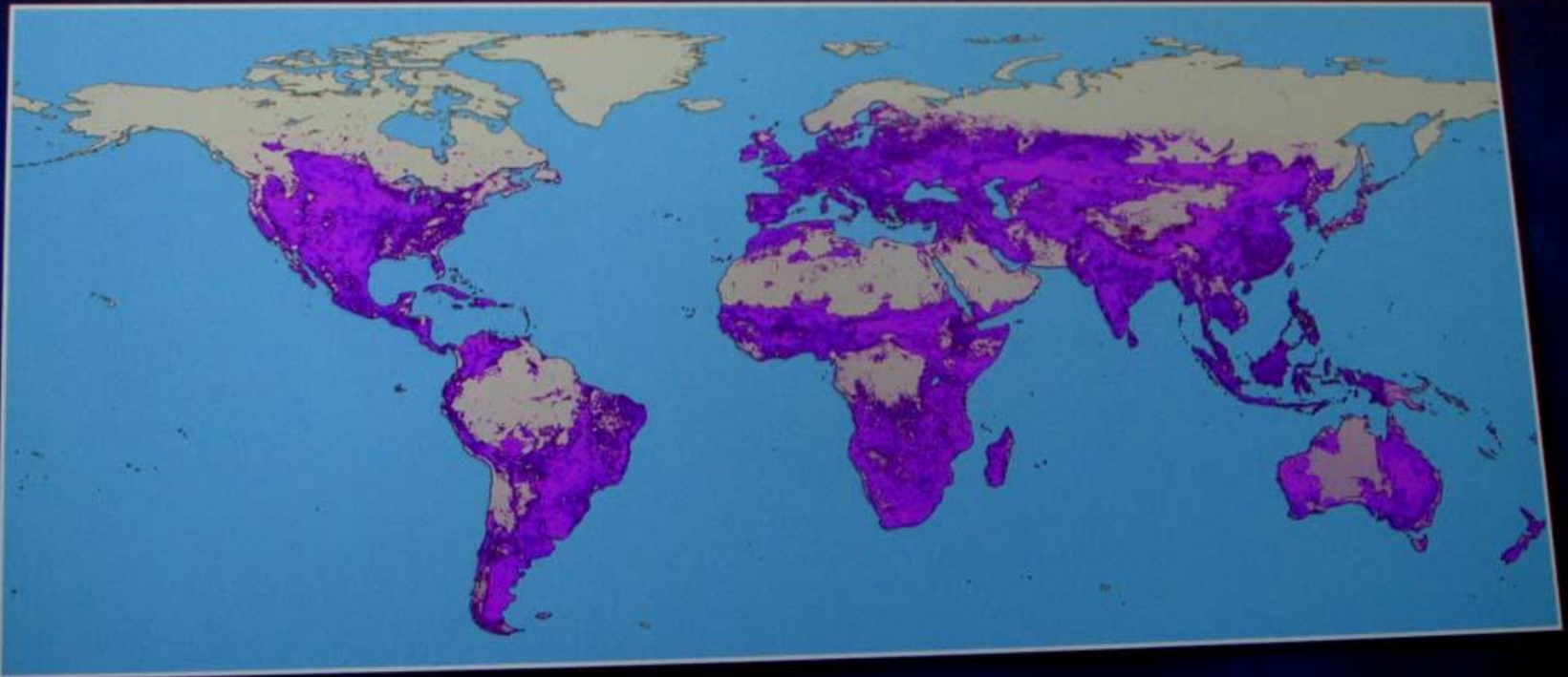


Historical
range of lions
until 200 years ago



Most land area of the planet has been converted to human use

**About 51% of Land Area Has Been
Converted for Human Use**



What Early Humans Knew

- Physiological changes compared with primates
 - Larger brain (the female pelvis is the limit)
 - More versatile larynx
 - No estrus
 - Helpless infants
 - Extended sexuality of females

What Early Humans Knew

- Inventions
 - Gathering
 - Hunting (Homo Erectus)
 - Language (Homo Erectus?)
 - Clothes
 - Private property
 - Trade

What Early Humans Knew

- The first tool?

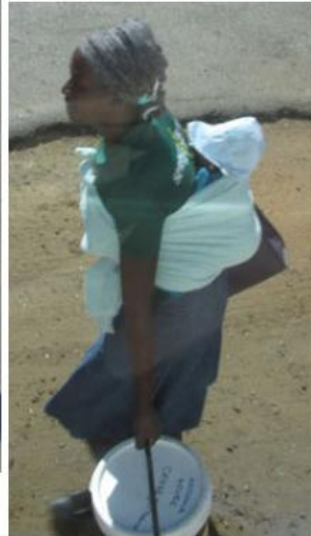


What Early Humans Knew

- Inventions
 - Tools (3 million years, Africa, before Homo Habilis)
 - Fire (1.9 million years, Africa, Homo Erectus)
 - Buildings (400,000 BC, France, Homo Erectus)
 - Cooking fires (250,000 BC, Europe and Middle East)
 - Paint (100,000 BC, South Africa)
 - Burial (90,000 BC, Israel & 70,000 BC, Neanderthal: belief in the afterlife older than the human species?)
 - Upper Paleolithic (40,000 - 10,000 BC): more specialized and varied tools, durable dwellings (not just caves), better clothing for cold weather, also non-utilitarian artifacts (art)
 - Art (28,000 BC, Austria, Homo Sapiens)

What Early Humans Knew

- Inventions
 - The first tool: the sling



What Early Humans Knew

- Inventions
 - Fishing hooks (21,000 BC, Japan)
 - Epipaleolithic 18,000-9,000 BC: open air settlements made possible by warming of climate
 - Lamp (17,000 BC, France)
 - Farming (14,000 BC, Mesopotamia)
 - Slavery? (earliest known case: 8,000 BC Libya)
 - Domesticated animals (12,000 BC, Kurdistan)
 - Boat (8,000 BC, Holland/ Norway, but earlier in Oceania, and some seafaring technology as far back as 130,000 BC in the Mediterranean)
 - Weapons (bow, sling, dagger, mace) (8,000 BC)



World's oldest fishhooks found

Archaeologists find the world's oldest fishhooks in a cave on the Japanese island of Okinawa, dating from about 23,000 years ago.

What Early Humans Knew

- Inventions
 - Cooking pottery (13-8,000 BC, Japan)
 - Alcohol (7,000 BC, China)
 - Weaving (6,500 BC, Palestine)
 - Trade/Buying-selling/Money
 - Wine (Zagros mountains, 5,400 BC)
 - Musical instruments (5,000 BC, Sumeria)
 - Metal (4,500 BC, Egypt)
 - Domestication of the horse (4,000 BC, Eurasian steppes)
 - Bridge (4,000 BC, Egypt)
 - Potter's wheel (4,000 BC, Mesopotamia)
 - Copper: Byblos (4,000 BC)
 - Wheel (3,500 BC, Mesopotamia)

What Early Humans Knew

- Revolutions
 - Homo Sapiens (150,000 BC)
 - Religious revolution (70,000 BC)
 - Artistic revolution (28,000 BC)
 - Agricultural revolution (10,000 BC)
 - Metalwork revolution (4,500 BC)
 - Urban revolution (3,700 BC)
 - Writing revolution (3,300 BC)
 - Spiritual revolution (500 BC)
 - Scientific revolution (17th c)
 - Digital revolution (20th c)

What Early Humans Knew

- The Importance of Migrations
 - Great migrations (and genocides) were the norm until 3,000 BC
 - You are NOT who you think you are: your ancestors lived in a completely different place

What Early Humans Knew

- Prehistoric beliefs
 - Unity of Heaven and Earth (were separated by a God)
 - Immortality (life in the Afterlife)
 - Natural world pervaded by supernatural forces

What Early Humans Knew

- Burial
 - 70,000 BC: burial of man in Shanidar Cave 4 in northern Iraq over a bed of flowers (Neanderthal), perhaps also the oldest evidence of murder (cave 3)
 - Cro-Magnon burials (30,000 BC)
 - Sungir grave (30,000 BC)
 - Dolni Vestonice grave (28,000 BC)



What Early Humans Knew

- Burial
 - First elaborate tombs and cult of the dead when non-nomadic communities form (transition from hunting/gathering to farming/domestication)
 - As hierarchical societies form, burials differentiate accordingly (one to one correspondence between dead and mourner is replaced by one to many correspondence)
 - 3,500-3,000 BC: monumental tombs (Abydos-Egypt, Ur-Mesopotamia, Liangthi-China, New Grange-Ireland)

What Early Humans Knew

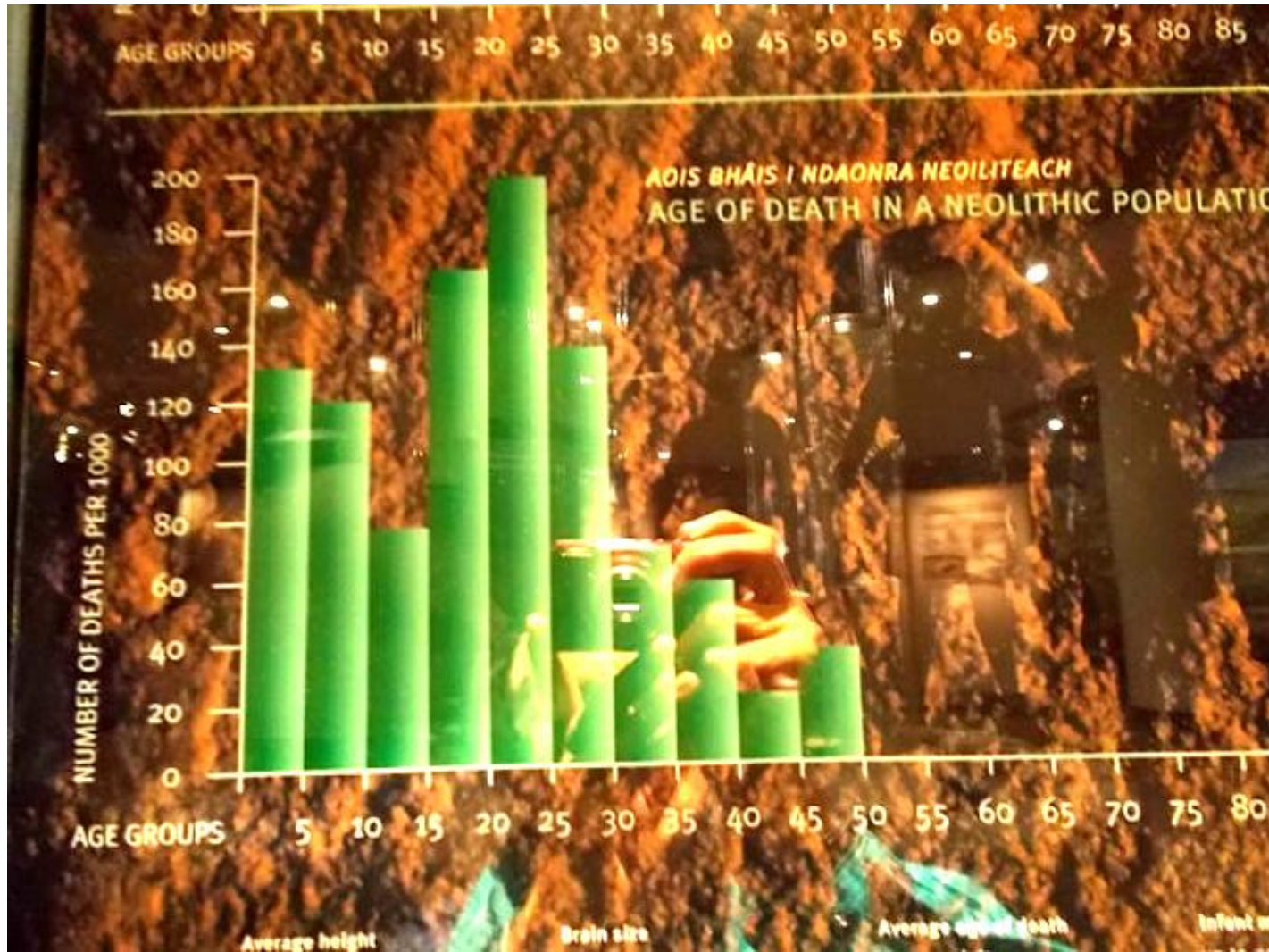
- Rituals
 - Purpose: storage, transmission and enaction of knowledge
 - Instructions: a rite's actions (e.g., the words of a song) describe an action
 - Timing: each rite's part (e.g., a song) lasts as much as the action has to last (e.g., heating copper to smelt it)

What Early Humans Knew

- Progress
 - Why did it take so long for art and science to get going?
 - It takes 15-20 years for the human brain to fully develop and become "creative"
 - The life expectancy of early humans was probably about 20
 - Civilization (art, technology, science) is a by-product of longevity

What Early Humans Knew

- Life expectancy in prehistory



What Early Humans Knew

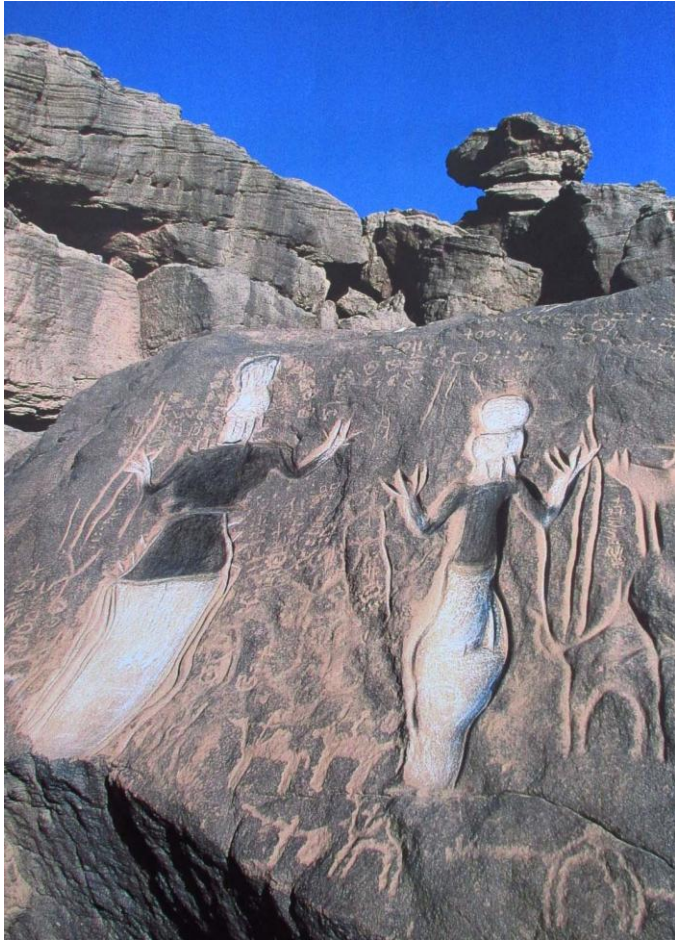
- Artistic revolution
 - Representing the environment
 - Representing other humans
 - Representing the self

What Early Humans Knew

- Origins of Art
 - Visual representation
 - Painting and Dance
 - Painting evolved into writing
 - Dance evolved into theater
 - Writing codified theater
 - Acoustic representation
 - Music
 - Music evolved into poetry
 - Poetry evolved into epics
 - Epics evolved into fiction
 - Writing codified poetry and fiction

What Early Humans Knew

- Rock art of the Sahara (7,000-5,000 BC)



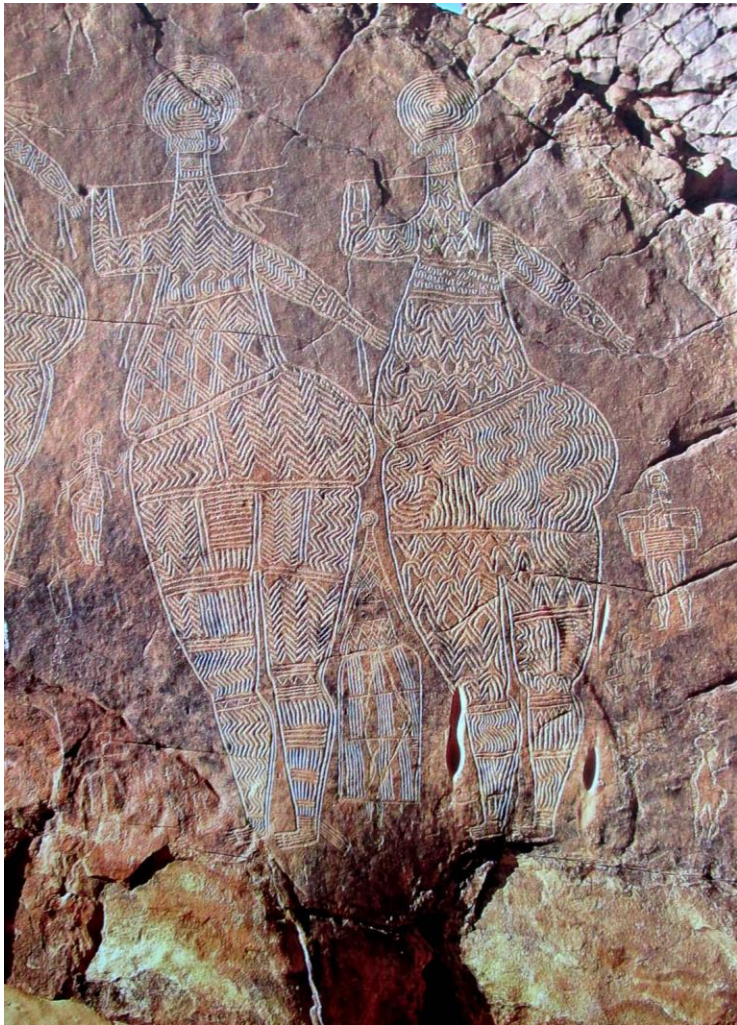
Air Mountain, Niger



Algeria

What Early Humans Knew

- Rock art of the Sahara (7,000-5,000 BC)



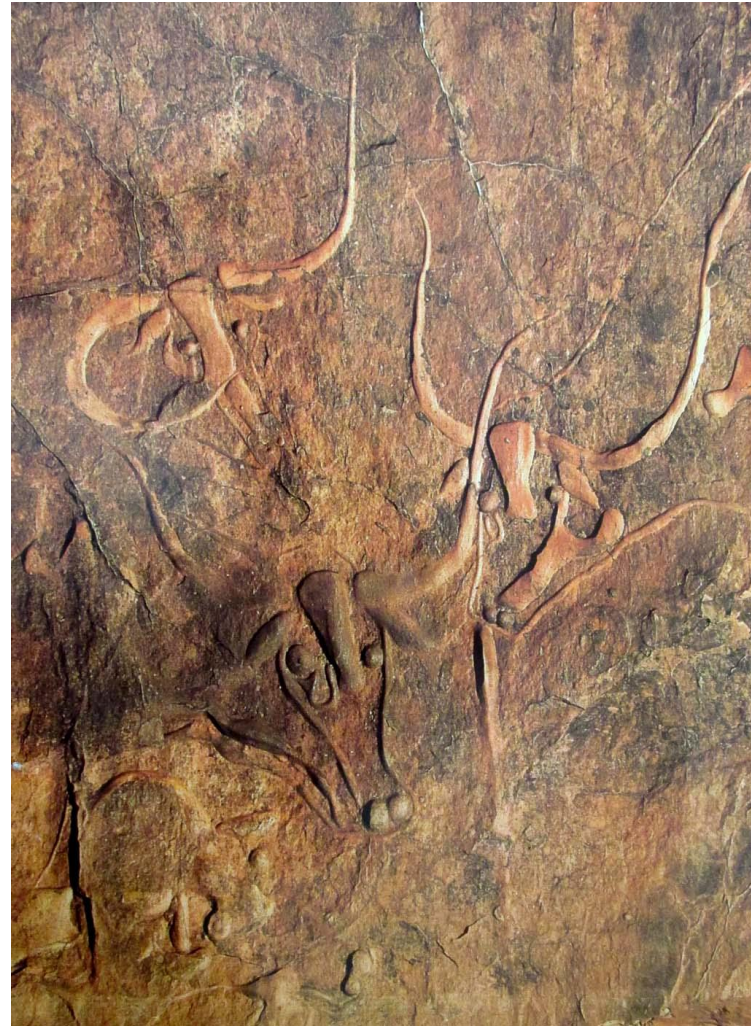
Ennedi
(Chad)



Fezzan (Libya)

What Early Humans Knew

- Rock art of the Sahara (7,000-5,000 BC)



Tassili
(Algeria)

Libya



What Early Humans Knew

- Rock art of the Sahara (7,000-5,000 BC)



Libya

What Early Humans Knew

- Exploiting the environment
 - Domestication of animals
 - Food
 - Clothes (wool, leather, silk)
 - Transportation
 - Immunization to germs
 - Agriculture
 - Food
 - Homes and furniture
 - Tools (rope, net,...)
 - Minerals
 - Tools (stone, copper, bronze, iron)

What Early Humans Knew

- Stone Age
 - Paleolithic (2 million years ago to 13,000 BC)
 - Mesolithic
 - Neolithic (8000 BC, more sophisticated stone tools, weaving, pottery, long-distance travel)

What Early Humans Knew

- Chalcolithic (Copper-Stone) Age
 - Copper: humankind's first metal
 - 10,000 BC (tools and ornaments)
 - Asia Minor 5500 BC
 - Mesopotamia 4000 BC
 - Egypt 3900 BC
 - China 2500 BC
 - India: much later

What Early Humans Knew

- Bronze (copper + tin) Age
 - Sumerians 3300 BC
 - Asia Minor 3100 BC
 - Greece 3000 BC
 - India 2500 BC
 - Sicily 2500 BC
 - Egypt 2200 BC
 - Thailand 2100 BC
 - Britain 1800 BC
 - China 1800 BC
 - Japan 0
 - Pre-Columbian America 1000 AD

What Early Humans Knew

- Bronze (copper + tin) Age
 - Bronze metallurgy entails a settled and organized society
 - Mining the ores of copper and tin
 - Smelting

What Early Humans Knew

- Iron Age
 - Possibly first smelted in Sudan
 - Assyrians 3200 BC
 - Egypt 2600 BC
 - Hittites 1800 BC
 - No iron objects outside the area bounded by Anatolia, Mesopotamia, Egypt, and Crete before 1600 BC
 - Greece 1200 BC
 - India 1100 BC
 - Gaul (Celts) 800 BC
 - Britain 700 BC
 - China 600 BC
 - Scandinavia: 100 AD - Japan: 200 AD - Russia: 800 AD

What Early Humans Knew

- Iron Age
 - In the 19th century BC the Assyrian merchants of Kültepe were willing to pay 40 times its weight in silver for amutum or iron. By the 7th century BC in Greece, a silver drachma would buy an iron ingot 2000 times its own weight. In other words, iron had become 80,000 times cheaper in relation to silver in those 1200 years

What Early Humans Knew

- Bronze age = Widespread use of bronze
- Iron age = Widespread use of iron

Date	Near East	India	China	Greece	Europe
3500	Bronze Age				
3000	Sumer 	Bronze Age		Bronze Age	
2500				Crete	
2000		Indus Valley	Shang 		Bronze Age
1500	Assyria	Veda	Bronze Age	Mycenae 	
1000	Iron Age	Iron Age	Zhou	Iron Age	
500	Persia	Maurya	Iron Age	Athens	Iron Age 
0	Rome		Han	Rome	Rome
500	Islam	Gupta	Tang	Byzantium	Franks
1000	Turks		Song		England
1500			Ming	Turks	Spain

What Early Humans Knew

- (Bronze Age - Iron Age)
 - Near East (3300-1200 BC)
 - India (3,000-1,100 BC)
 - Greece (3,000-1,200 BC)
 - Europe (2000-800 BC)
 - China (1800-600 BC)
 - Egypt (2200-500 BC)
 - Southeast Asia (2100 BC-500 BC)
 - Japan (0 - 200 AD)
 - America (1000 AD - 1500 AD)

What Early Humans Knew

- Mystery: why did humans become farmers?
 - Hunter-gatherers had a better diet than farmers (more varied and healthier)
 - Farming selects the best plants thus reducing biodiversity
 - Farmers are more likely to experience famine because they are betting on those plants
 - Farmers need to protect livestock and vegetables from both predators and thieves

What Early Humans Knew

- Mystery: why did humans become farmers?
 - Farmers are more likely to be infected with diseases spread by domesticated animals
 - Hunter-gatherers were not poor because their societies were egalitarians, whereas some farmers were very poor.
 - Another oddity about food: why did humans offer food to gods and to dead people (even knowing well that neither gods nor dead people ate the food?)
 - Trade of food was crucial for the spreading of ideas and inventions

What Early Humans Knew

- The rise of tribalism
 - Sedentary life creates a village-based life
 - The idea of family becomes stronger and associated with a place
 - Families form clans and tribes
 - Reverence for the ancestors, who are buried nearby

What Early Humans Knew

- The rise of institutions
 - Family
 - Helpless infants
 - Extended female sexuality
 - Division of hunting/farming duties
 - Women: herding, tilling the soil, weaving, pottery making, raising children

What Early Humans Knew

- The rise of institutions
 - Religion
 - Worship of ancestors (immortality easier to grasp than mortality) +
 - Animism (forces that move the world are due to “spirits”) +
 - Magic (no need for gods to control the world, just right combination of action) +
 - Personality cult (leaders who discover the right combination of action, which become rules/commandments for the others) +
 - A theory that self-sacrifice is rewarded +
 - A theory that the spirits that move the world can be influenced by self-sacrifice

What Early Humans Knew

- The rise of institutions
 - Religion
 - Ultimate goal: control of nature
 - Humans can control nature through the spirits that control nature
 - First “gods”: sun, rain, fertility (the most important aspects to control for survival)
 - Anthropomorphic spirits/gods: direct link between humans and the forces

What Early Humans Knew

- The rise of institutions
 - Private property
 - Women, Tools, Animals, Land

What Early Humans Knew

- The Origin of Urbanization
 - First magnets for people to meet and return: cemeteries and sanctuaries (the cities of the dead may predate the cities of the living)
 - The city as a medium for storing and transmitting knowledge (whether collective rituals or individual achievements)

What Early Humans Knew

- The Origin of Urbanization
 - Difference between tribe and town:
 - Tribe = blood ties
 - Town = business ties
 - Urbanization due to the “wealth” gap:
 - The motivation to relocate away from one’s tribe is proportional to the “wealth gap”
 - Agriculture created the first “wealth gap”

What Early Humans Knew

- Catal Huyuk



What Early Humans Knew

- **Choirokoitia**



What Early Humans Knew

- Writing
 - Near East (3,300 BC)
 - Egypt (3,000 BC)
 - India (2,200 BC)
 - Greece (1,900 BC)
 - China (1800 BC)
 - America (600 BC)
 - Japan (700 AD)

What Early Humans Knew

- Writing
 - Sumerian: accounting (representation of the past)
 - Chinese: divination (representation of the future)

What Early Humans Knew

- What came first...
 - The agricultural revolution of 12,000 BC caused a change in the way of thinking (religion, cities, etc)
 - or...
 - A change in the way of thinking (an evolutionary change in the human brain) caused the agricultural revolution of 12,000 BC
 - A very small change in the brain can cause a very big difference in behavior

What Early Humans Knew

- What came first...
 - After agriculture arrived in Europe 8,500 years ago, people's DNA underwent widespread changes, altering their height, digestion, immune system and skin color (David Reich, 2015)

What Early Humans Knew

- Agricultural revolution in Europe (7,000 BC)
 - first major transformation of Europe's population since the Ice Age: the arrival of farmers from the Near East

What Early Humans Knew

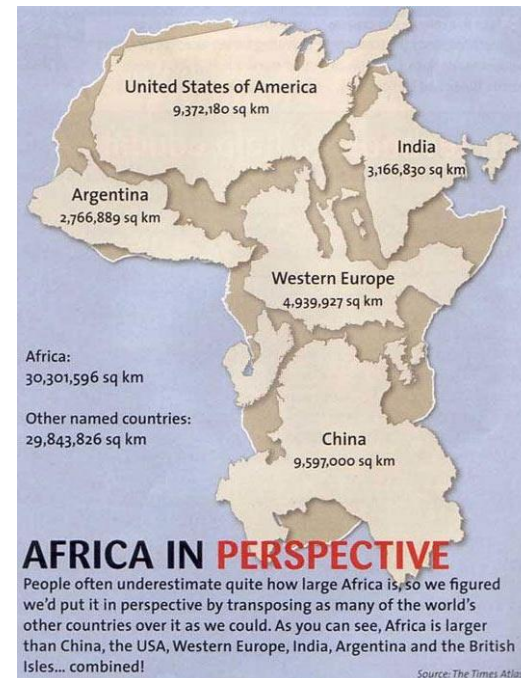
- The Yamnaya (3,000 BC)
 - the lower reaches of the Dnieper and Don rivers
 - the world's first nomadic pastoralists
 - From the Eurasian steppe they expanded east and west
 - second major transformation of Europe's population since the Ice Age

Empires

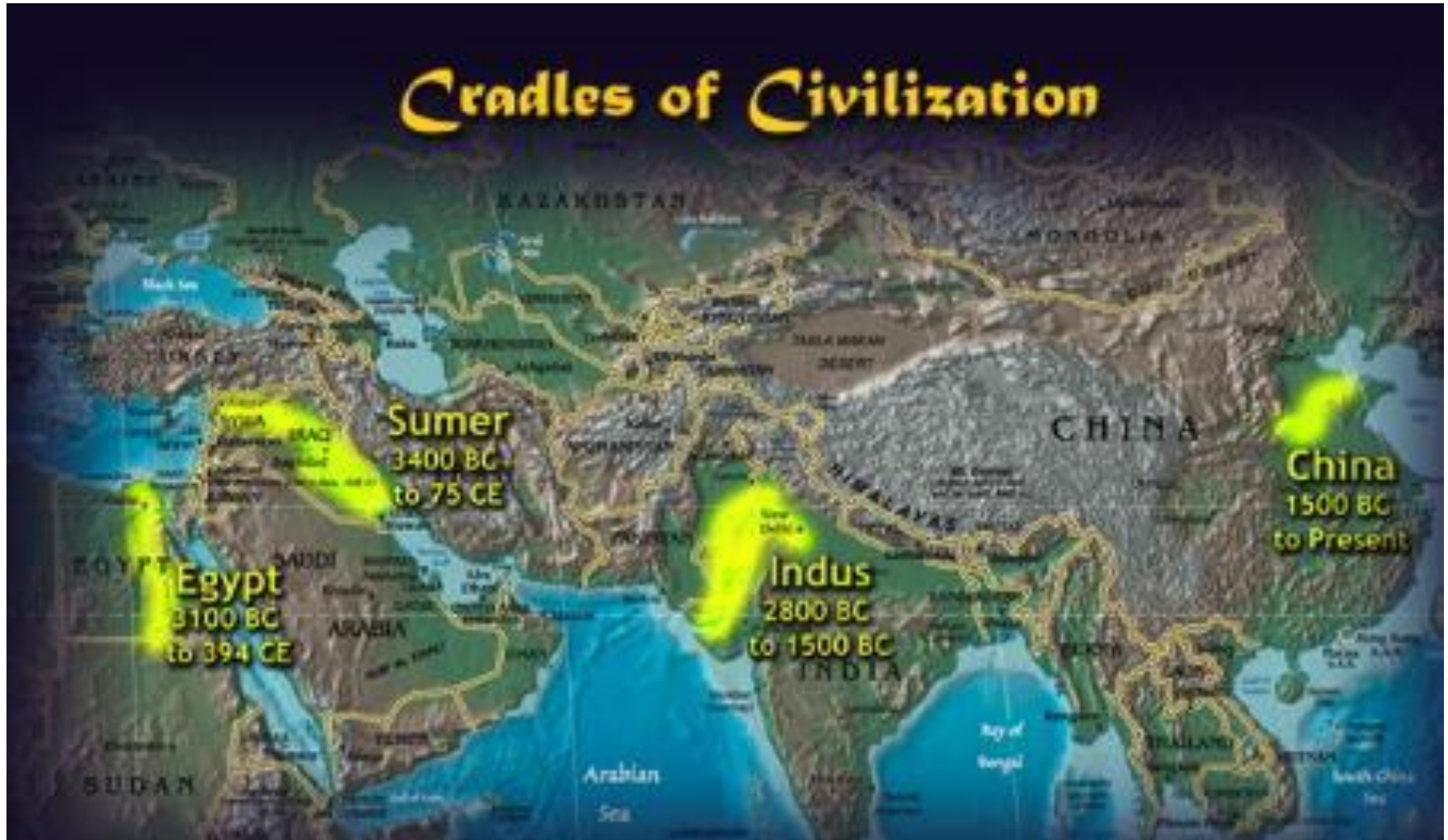
EMPIRE	CENTURIES	REGION	CAPITAL
SUMERS	XXXVI BC - XXBC	MESOPOTAMIA	UR
EGYPTIANS	XXXV BC - VI BC	EGYPT, SUDAN, PALESTINE	THEBES
ELAMITES	XXVIII BC - VII BC	PERSIA	ELAM
MINOANS	XXVI BC - XV BC	CRETE	KNOSSOS
CHINA	XXIII BC - NOW	CHINA	XIAN
ASSYRIA	XX BC - VII BC	MESOPOTAMIA	NINIVE
BABYLON	XVIII BC - VI BC	MESOPOTAMIA TO EGYPT	BABYLON
HITTITES	XVII BC - XIII	TURKEY, PALESTINE, EGYPT	HATTUSA
ACHEMENIDS	XVII BC - XII BC	GREECE	MYCENAE
PHOENICIANS	XII BC - VIII BC	MEDITERRANEAN	TYRO
GREECE	XII BC - IV BC	GREECE, ITALY, TURKEY	ATHENS
PERSIA	IX BC - IV BC	EGYPT TO IRAN	PERSEPOLIS
ROME	VIII BC - V AD	PORTUGAL TO SYRIA	ROME
MACEDONIA	IV BC - IV BC	EGYPT TO NORTH INDIA	ALEXANDRIA

EMPIRE	TIMEFRAME	AREA	CAPITAL
SELEUCIDS	IV BC - I BC	TURKEY TO AFGHANISTAN	ANTIOCH
BACTRIA	III BC - II BC	AFGHANISTAN TO INDIA	SOGDIANA
MAURYA	IV BC - II BC	INDIA	PATNA
PARTHIA	III BC - III AD	TURKMENISTAN, IRAN	NISA
SASSANIDS	III AD - VII AD	PERSIA	CTESIPHON
JAPAN	I AD - XX AD	JAPAN, KOREA	NARA
BYZANTHIUM	V AD - XV AD	TURKEY TO NORTH AFRICA	CONSTANTINOPLE
FRANCE	V AD - XX AD	WEST EUROPE/ NORTH AFRICA	FRANCE
ARABS	VII AD - XV AD	IRAN TO SPAIN	BAGHDAD
VIKINGS	IX AD - XII AD	SCANDINAVIA TO BRITAIN	OSLO
SPAIN	IX AD - XX AD	SPAIN, SOUTH AMERICA	MADRID
MAYA	IX AD - XV AD	CENTRAL AMERICA	TIKAL
KHMER	IX AD - XV AD	INDOCHINA	ANGKOR
RUSSIA	X AD - NOW	RUSSIA TO SIBERIA	KIEV
POLAND	X AD - XVII AD	POLAND, WEST RUSSIA	KRACOW
BRITAIN	X AD - XX AD	INDIA, NORTH AM, AFRICA, AUS	LONDON

EMPIRE	TIMEFRAME	AREA	CAPITAL
MONGOLS	XIII AD - XV AD	CHINA TO MIDDLE EAST	KARAKORUM
OTTOMANS	XIV AD - XX AD	EGYPT TO MESOPOTAMIA	ISTANBUL
AZTEC	XIV AD - XV AD	MEXICO	TENOCHTITLAN
INCA	XV AD - XVI AD	SOUTHWEST AMERICA	CUZCO
MOGUL	XV AD - XVIII AD	AFGHANISTAN, NORTH INDIA	DELHI
USA	XIX AD - NOW	NORTH AMERICA	WASHINGTON



The Origins of Civilization



(Courtesy Rafael Olivas)

The Origins of Civilization



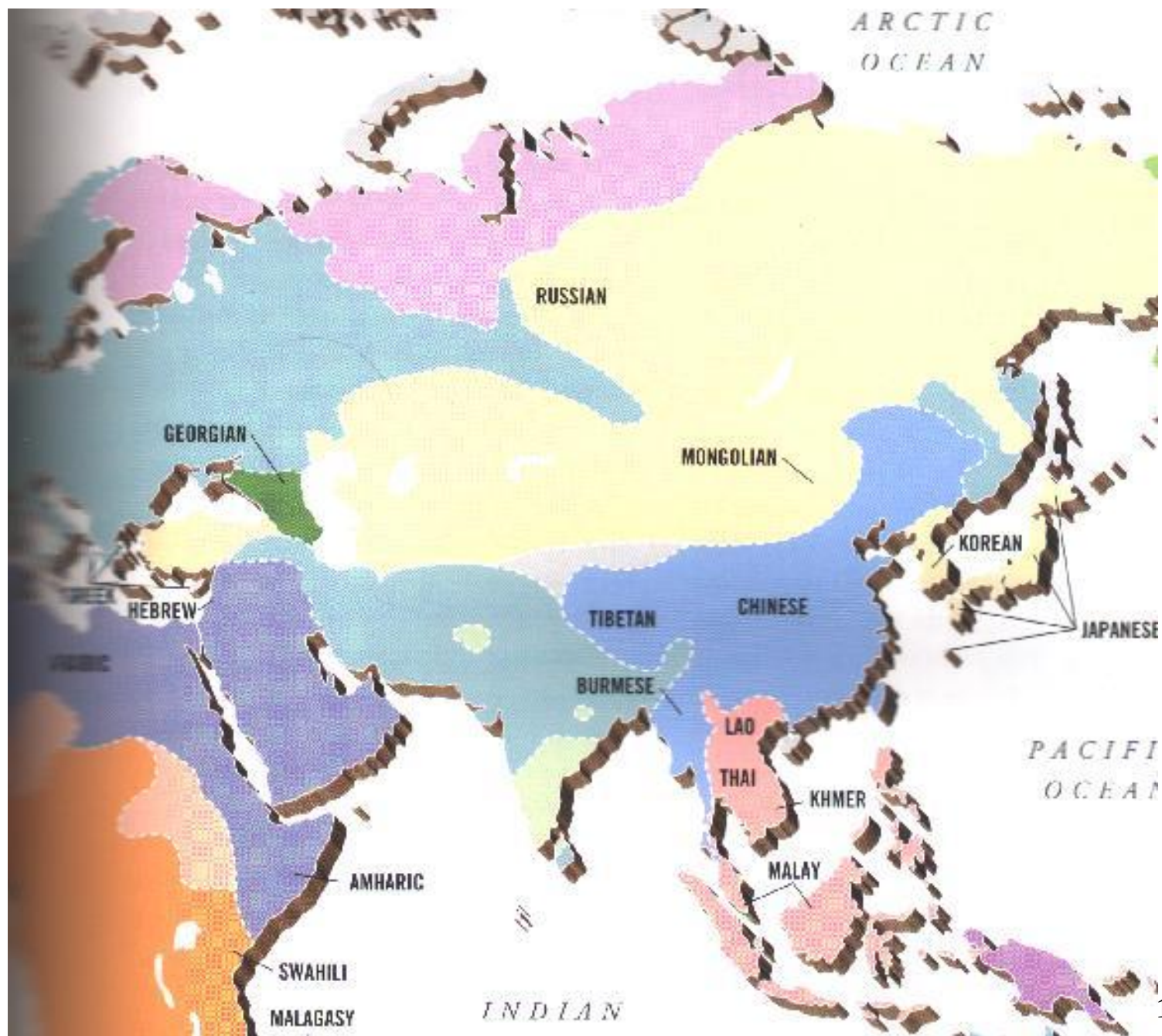
(Courtesy Rafael Olivas)

Eurasia

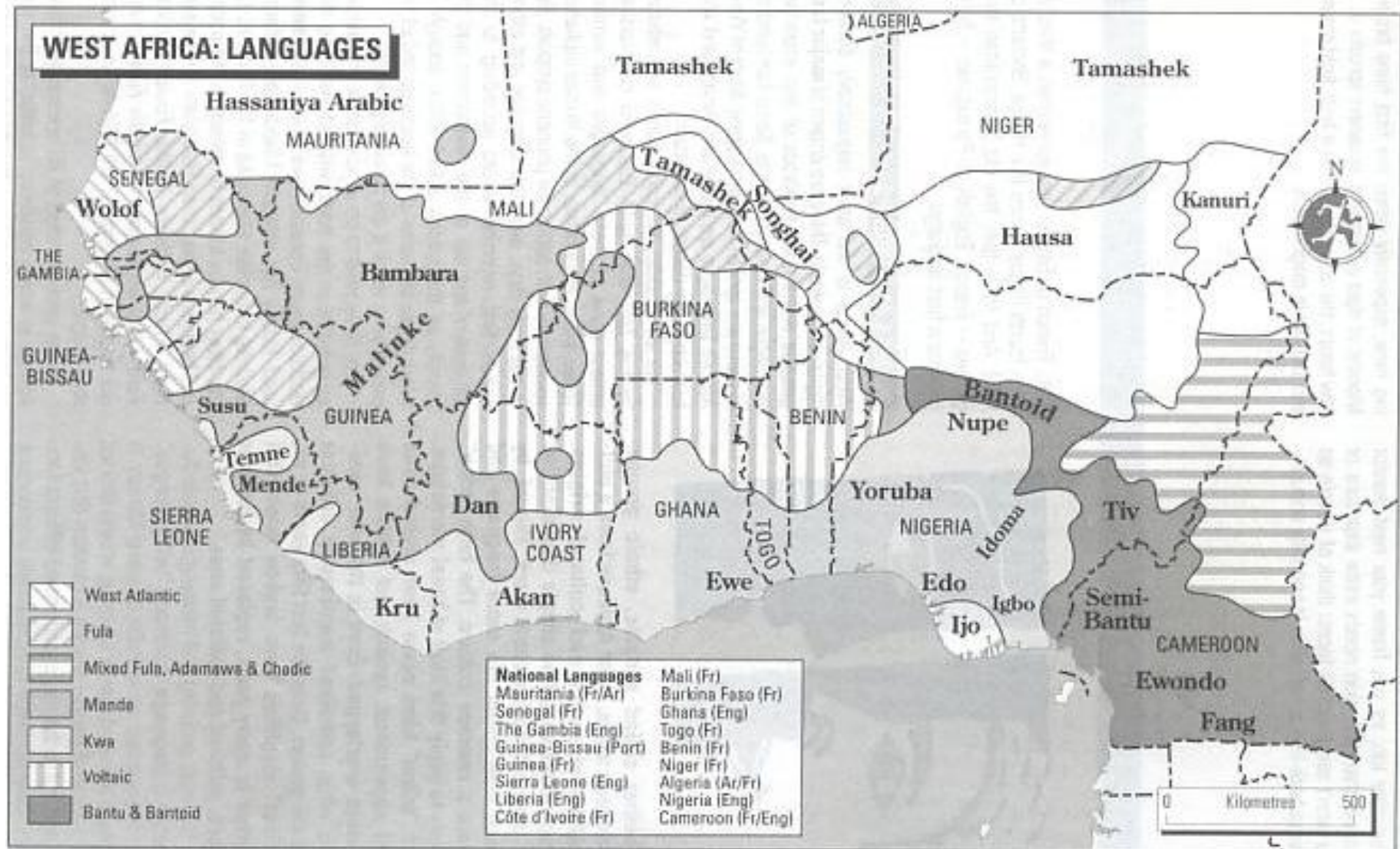
- Why Mesopotamia, Egypt, Indus Valley and China?
 - The axis matters: as ideas spread, they have to spread horizontally in Eurasia because the axis of the continent is horizontal, but vertically in Africa and the Americas
 - The climate is relatively stable as one moves horizontally, but varies wildly as one moves vertically
 - Biological experiments (domestication of plants and animals) carried out in one place can be easily replicated in another place with similar climate
 - Thus domestication (and food production) spread more easily in Eurasia than in other continents
 - Technology followed the routes of domestication

Linguistic Families

- Semitic: Akkadian, Phoenician, Aramaic, Hebrew, Arabic, Amharic (Ethiopic)
- Egyptian
- Indo-European (Italic, German, Indian, English...)
- Dravidian (South Indian)
- Sino-tibetan languages: Mandarin, Cantonese, Tibetan, Burmese)
- Altaic (Turkish, Mongolian, Central Asian, Japanese, Korean)
- Austric (Thai, Malay, Khmer, Vietnamese)
- Niger-Congo
- ...



Linguistic Families



Linguistic Families

Southern Area of Wider Affinity – “Niger-Congo” Languages

WEST-ATLANTIC LANGUAGES

Fula (Fulani, Peul, Fulbe), Tukulor,	Sherbro, Bulom	Pepel, Manjak
Bororo	Kissi	Gola
Wolof	Limba	Baga
Temne	Jola (Diola), Fogny, Banjal	Tenda, Basari
Serer	Balante	Bijago (Bidyago)

VOLTAIC LANGUAGES

MORE/MOLE

Mossi
Dagomba
Mamprusi
Wala

SENUFO

Senoufo, Djimini, Karaboro
Minianka

GURMA

Gourmantché
Bassari, Tchamba
Moba

GRUSI

Gourounsi, Kassena, Sissala
Dagara (Dagarti)
Lilse, Fulse (Kurumba)
Fratra
Bulsa
Wagala

TEM

Kabré (Kabyé) Logba, Tambarma,
Lamba
Tem (Kotokoli, Cotocoli)

LOBI

Loron
Nabe
Gan
Koulango

HABE

Bobo, Bwaba, Kos, Siby
Dogon

BARGU

Somba (Betammariba)
Bargu (Bariba)
Yowa

KWA LANGUAGES

KRU

Bete
Dida
Grebo
Krahn
Bakwe
Baasa

EDO

Edo
Bini
Isoko, Urhobo (Sobo)
Kukunuku

NUPE

Nupe
Igbira
Gwan, Koro

YORUBA

Yoruba, Oyo
Egba
Ijebu
Ekiti
Ife
Bunu
Itsekiri
Ana

IDOMA

Idoma
Igale
Egede
Iyala

IGBO

Igbo (Ibo), Onitsha

TWI LANGUAGES

Akan

Twi (Asante)
Baulé
Fante
Agni
Abron
Akwapim
Guang

Ewe

Fon, Adja, Xwala, Xuéda, Maxi
Ewe, Ang-lo
Ga-Adangme
Mina, Popo
Gun, Tofinu

Central Togo

Akposso

Lagoon

Abé
Ajukru
Abidji
Abladian
Assini, Nzima
Ebré

IJO LANGUAGES

Ijo (Ijaw)

Brass

Kalabari

EASTERN NIGRITIC LANGUAGES

ADAMAWA

Fali
Massa

Mbum
Mundang

Namshi
Chamba

Longuda
Mumuye

Vere
Yungur

BANTOID LANGUAGES

Ibibio, Efik, Anang
Mada
Katab
Boki
Kamberi

Biom
Ekoi, Oban
Orri, Ukelie
Korup
Dukakari

Jerawa
Anyang
Basa-Kaduna
Yergum
Jukun

MACRO-BANTU

Jarawa

Mambila

North-Western Bantu

Ewondo (Yaoundé)
Bulu, Fang, Eton

Batanga
Bakweri, Bimbia

Moun (Bamoun, Bamum)
Fia (Bafia)
Nso (Bansaw)

This is a chapter in piero scaruffi's
“A History of Knowledge”

Look up the table of contents at

<http://www.scaruffi.com/know/history>

Piero Scaruffi
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