

Reductionist Materialism: A Critique

Historians of science say that science has ended in reductionist materialism. No design nor intelligent causation is evident. Matter and force explain the universe. Life is chemistry. Evolution proceeds by selection of accidents. Mind is an activity of material organisms. Freedom is possible only on the basis of quantum indeterminacy.

Joseph Preston Baratta
Torch Club, 9 December 2021



The Big Bang

The universe began, for reasons unknown, in a Big Bang 13.7 billion years ago.

Science can trace the developments of the material elements and four known forces — gravity, electromagnetism, strong and weak nuclear forces — only after 10^{-43} second. This is an exceedingly brief period, but it is not zero. What happened before, and why, is not known. Authors like Steven Weinberg say that the universe began in a dimensionless point source — a “singularity” of infinite temperature and pressure. But he reports only the temperature at 10^{-43} sec, which was 10^{34} °K. This is a large number, expressed in powers of ten, considering that the temperature in the core of our sun is 10,000,000 degrees or 10^7 °K, but where energy at such a large temperature came from is our question. Out of nothing? The truth is that science has no *measure* of the temperature at the very beginning. When Weinberg says it was “infinite,” that is just his way of saying it could have been anything at all, for infinity means there is always a number bigger than the last. Moreover, there would have been no matter, for, even if all the space between electrons and protons in the nucleus of atoms, or between the quarks in the protons and neutrons were eliminated, there is still no room at all in a dimensionless point.

Later, by Einstein’s equation, $E = mc^2$, the energy “precipitated” into matter. The Big Bang was not like an explosion in the air. There was no space for matter to expand into. Rather, the expansion *created* space and time, and allowed the four forces to differentiate. Hence, it is meaningless, say the scientists, to ask, What happened *before* the Big Bang, since there was no time, or What *caused* it to originate, since we have no access to anything outside the observable universe. It is childish to ask.



Anthropic Principle.

The Anthropic Principle. A universe made for life and human beings?

Some 18 fundamental constants, like the weight of the electron compared to that of the proton, were determined in the early expansion of the universe, making it habitable for human beings. The proton weighs 1837 times that of an electron. If the negative electrons weren't so light, they would spiral into the nucleus, combine with the positive protons, and the universe would soon end as a massive neutron star! Chemistry would be impossible, and DNA could not form its helical shape. Similar constants include the electron shell structure of all the elements, which in the case of oxygen determines that water, H₂O, expands when it freezes; ice floats rather than sinks. In short, it appears that the universe was so exactly tuned that human beings could evolve in it. Some daring scientists called this the *anthropic principle*.

Most scientists were horrified at what appeared to be a revival of the argument from design, as if God chose the constants. That contradicted the settled scientific view of reductionist materialism. To avoid that, they supposed that *accidents* — chance events — explain the values of the fundamental constants. There must have been many universes — a multiverse — at the Big Bang. Those universes whose values would not permit further growth perished, or perhaps they still exist alongside of us — parallel universes. We have no evidence of them because their space and time are not shared with us. But no evidence means no science. *The anthropic principle seems more than a curious coincidence.*

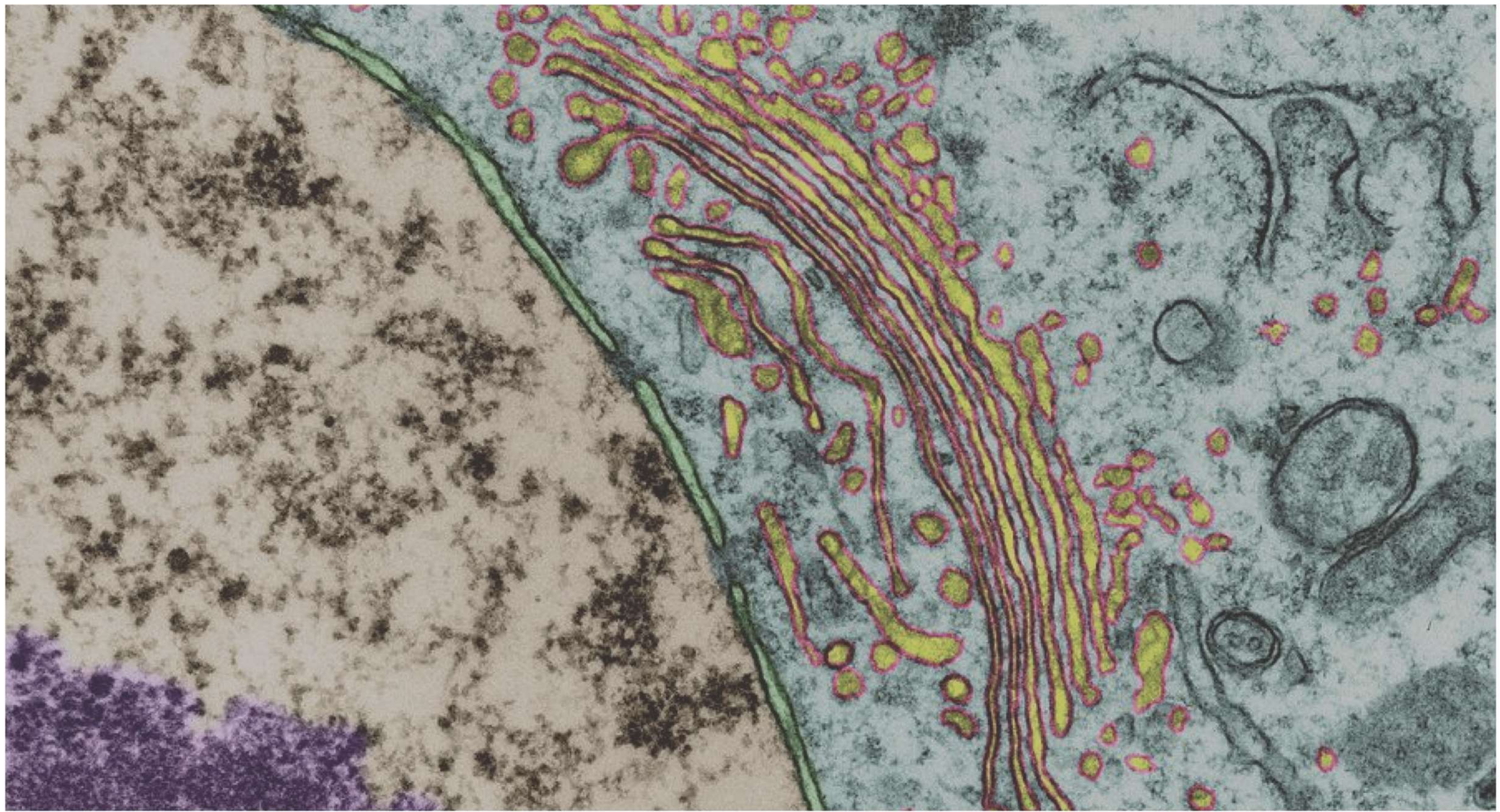


Life arose by chance accumulation of complex molecules 3.8 billion years ago

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700,000 years after the Big Bang, stable atoms (mostly hydrogen and helium) formed. They formed the first stars, which began the synthesis of the heavier elements. Galaxies formed, governed by gravity. Our sun and planets of the solar system formed out of primordial gas and dust 4.6 billion years ago. Life is thought to have arisen by chance in warm, shallow pools on the hot, sterile Earth, as chemicals catalyzed by lightning and ultraviolet rays in the primitive atmosphere accumulated. Or perhaps it arose near hydrothermal vents in the bottom of the sea or in other extremophile environments. In 800 million years (relatively quickly) a molecule formed that was capable of growth and reproduction. Life arose. An RNA molecule might have been enough, but it in time evolved into DNA. Because of this early appearance of life on Earth, scientists believe it must be common on other planets in the galaxy.

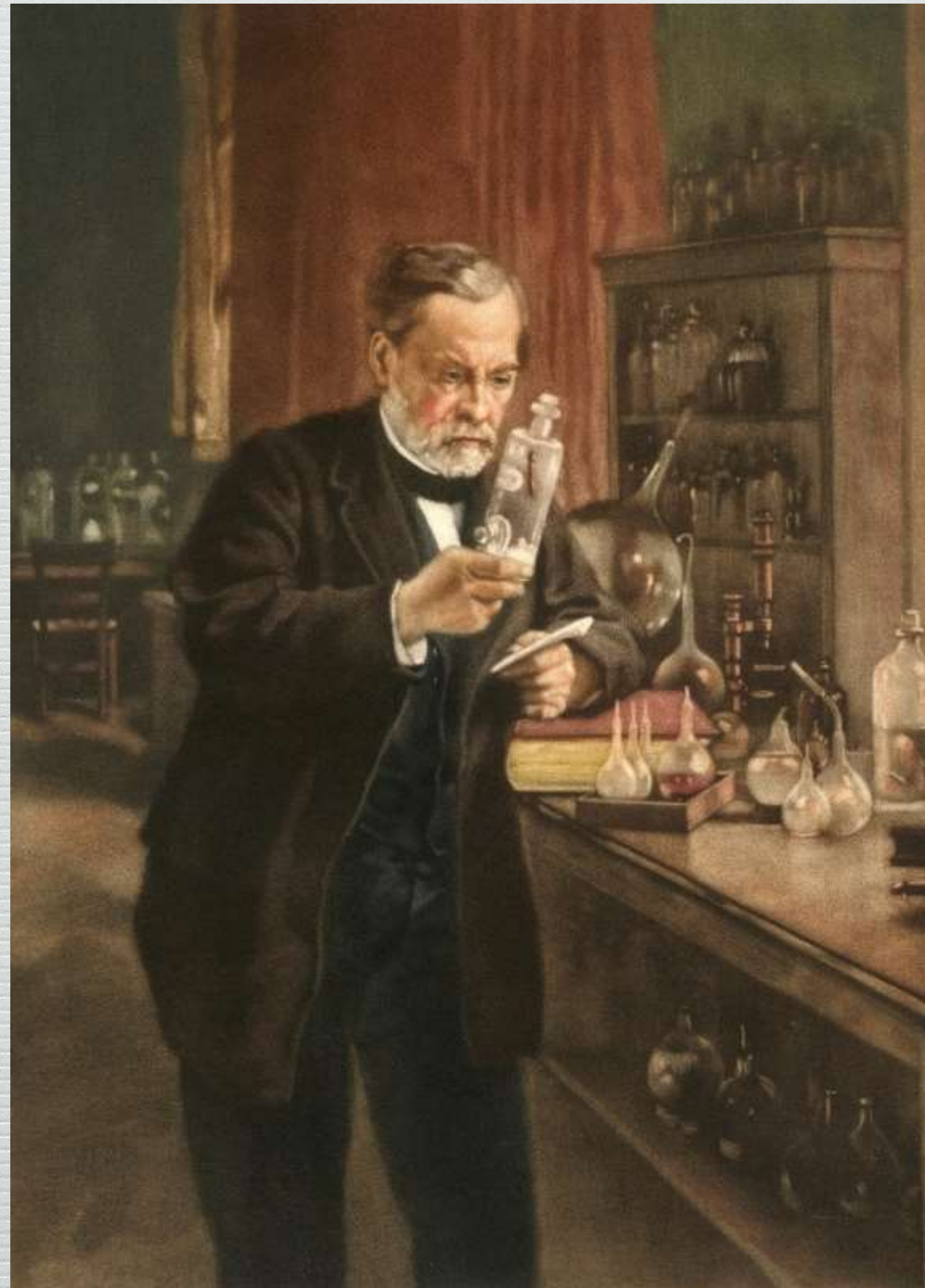
The elements of DNA, said to be the secret of life, are carbon, oxygen, hydrogen, nitrogen, and phosphorus. Except for hydrogen, those elements are said to have been made by fusion reactions in supernovae — titanic explosions — at the end of normal evolution of heavy stars. Those five elements possess all the powers to form RNA and then DNA molecules, establish the genetic code, then govern the construction of proteins (in the ribosome) for the structure and functioning of a living organism. All the powers of design, formerly assigned to the divine Creator, have now been assumed to lie within the material elements. This is difficult to believe. *The causes are not adequate to the effects.*



Life is a chemical process.

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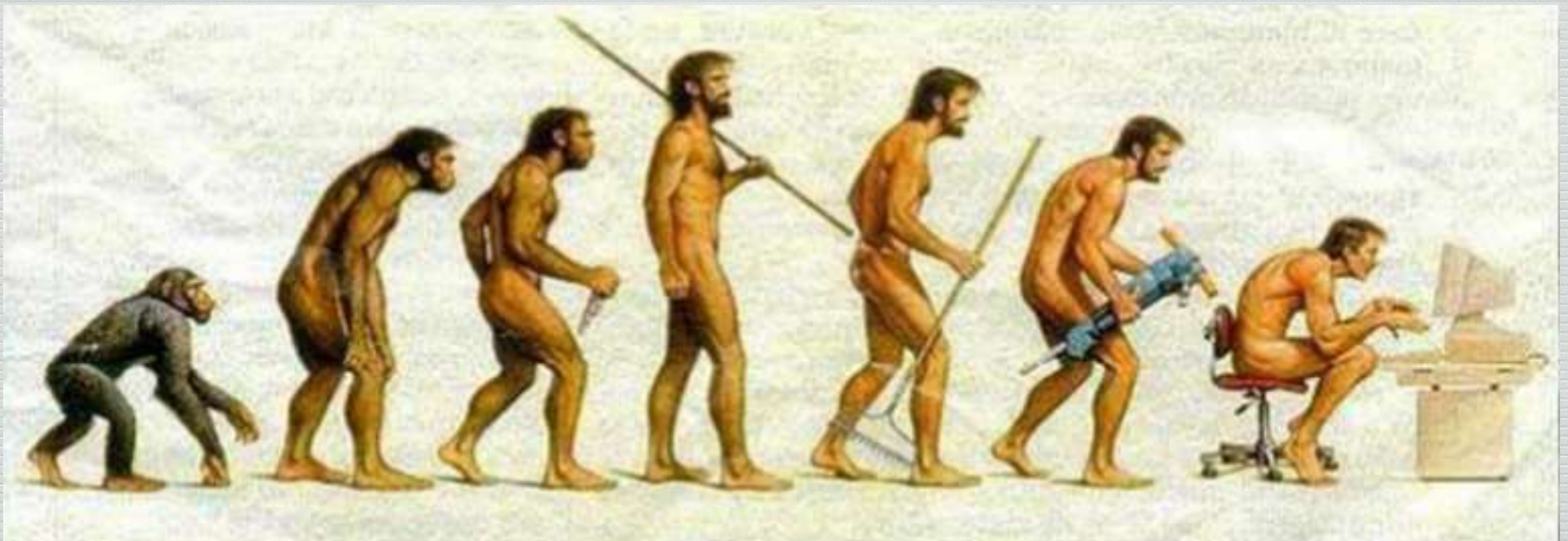
The proof of this view goes back to Friedrich Wöhler's synthesis of urea, an organic compound, from ammonium cyanate in 1828 [$\text{NH}_4\text{NCO} \rightarrow \text{H}_2\text{NCONH}_2$]. But consider metabolism. Every atom that goes to make up a protein or a nucleotide finds its way by virtue of the electromagnetic forces in its outer atomic shells. I find it instructive to follow the course of a single atom. Some atoms in molecules are rather rare, like iron in hemoglobin or magnesium in chlorophyll. Now, where does the cell find a single atom of, say, iron, and how does it place that atom deep in the center of a complex molecule of hemoglobin? The cytoplasm in the cell must be filled with millions of atoms — some rather rare, like iron, which are brought to their places on the target molecule without any intelligent agency but only due to the chemical attractions of their outer electron shells. It is said that protein enzymes find the needed atoms to do this work in the ribosomes, but how are the enzymes formed? How does an enzyme find a single atom and then latch onto it, as if by hand? Is it all due to chance movements — maybe by Brownian motion — until the enzyme, by electromagnetic forces, grasps the atom and transports it to the ribosome?



Organic and vitalist explanations are rejected for material ones (Pasteur).

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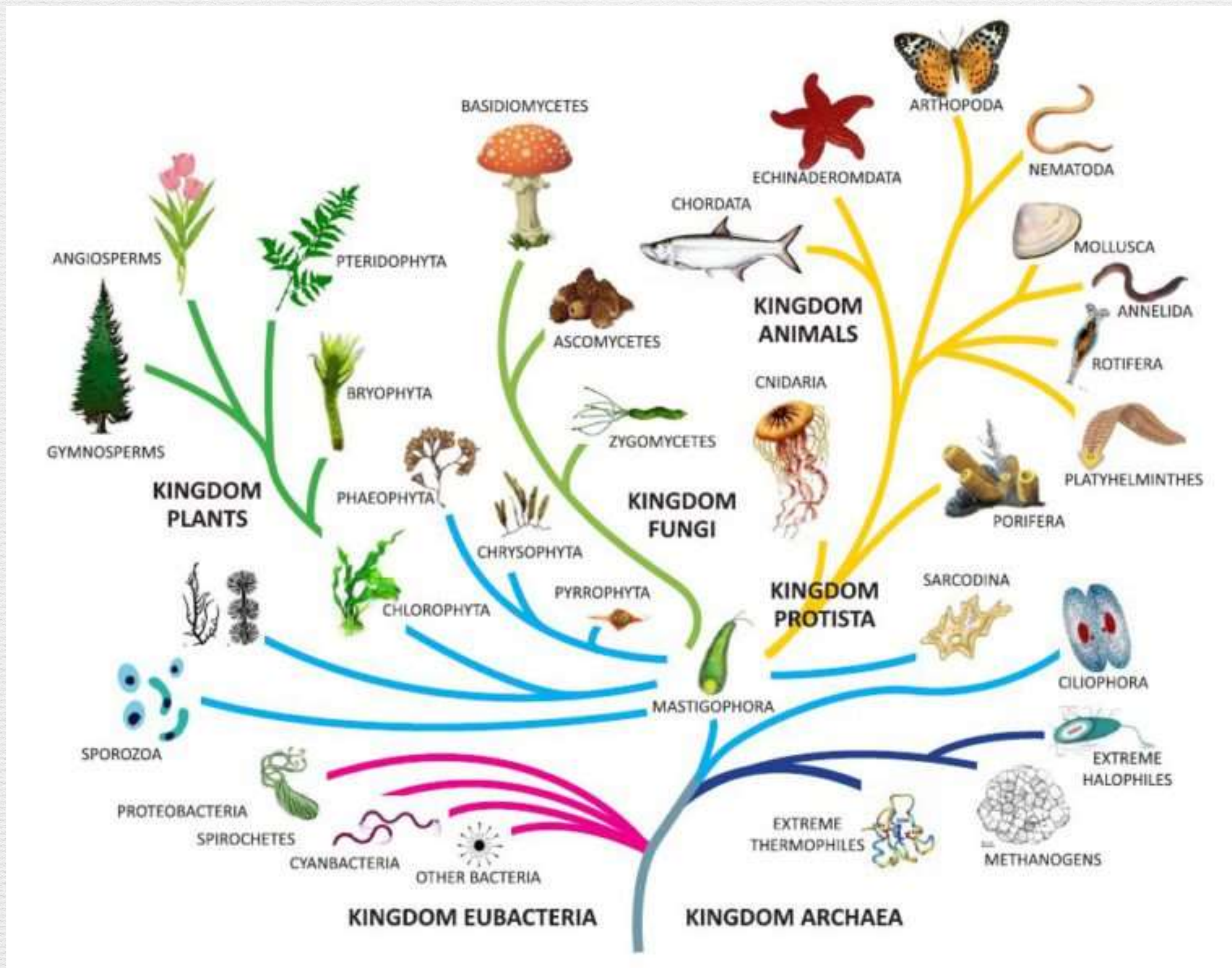
The history of biology exhibits a long, hard fought campaign against vitalism, most lately against Henri Bergson's notion of *élan vital* — a vital force that drives the evolution of species, or at least the production of variants for natural selection. The scientific objection is that such a force cannot be observed — its hypothesis cannot be tested or falsified — but how well do we understand the forces of the atomic shells as they combine in the immense chemistry of life? Why do species struggle to survive, given their chance variations, in Darwinian evolution? The struggle for freedom in a small wild animal, like a chipmunk, is hard to account for by forces at the atomic level. A variant of vitalism is the Gaia hypothesis of James Lovelock. Gaia comes from the Greek Γῆ, Earth. Lovelock proposed in 1979 an ecological theory that the whole Earth can be seen as a self-regulating system designed to maintain life. This is evident in the long Proterozoic era when bacteria gave rise to plants, which then filled the atmosphere with oxygen. Life nearly went extinct near the end of that era, when the earth completely froze over (twice). Life sent multicellular plants with woody tissue to colonize the land and evolved animals with skeletons breathing air to follow them in the Paleozoic era. This theory was roundly condemned by the materialists, who prevented its publication in such journals as *Nature* and *Science*. Said Lovelock: "It was as if the establishment, like the theological establishment in Galileo's time, would no longer tolerate radical or eccentric notions."



Life does not act for a purpose. Evolution proceeded by a series of accidents.

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Darwin excluded purpose in biology. When he did not find evidence of *divine creation* of species, he found *natural selection*, which adapted organisms to their environment. Basically, he applied Ockham's razor: Evolution is simpler than Creation of all the variety of life in one stupendous act, even in six days. Accidents are the source of variations. Plants and animals that survive the struggle for life and reproduce pass on the adaptations. Man is an animal, like any other, at the end of an evolutionary radiation, not on a ladder to supremacy. Evolution, like the Copernican revolution, takes man down a notch from his vaunted supremacy. He is not given "dominion over the fish of the sea, the birds of the air, and every living thing that moves upon the earth" [Genesis 1: 28)]. Now we think man is *part of nature*. Darwin's theory of evolution by natural selection is a *material* or *mechanical* theory; it is not teleological (purposeful). But even animals sometimes seem to be acting for a purpose, as when hunting or solving problems. *How can man, who needs purpose to act, belong to a biological order that excludes purpose?*



Evolution is not progressive. It is like a fan, not a ladder.

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As Darwin banished purpose from biology, so he denied that evolution was progressive. The smiling face of nature is not perfect; it is not even headed for perfection. Species are just more or less adapted to their changing environments. Evolution is not a ladder culminating in man (called by Linnaeus a *primate*). He is not the pinnacle of creation. Evolution is like a fan or tree, at whose tips of branches are the surviving species, like clams or horses. We do not have dominion. *We belong in nature.*



Is man the product of nature or nurture?

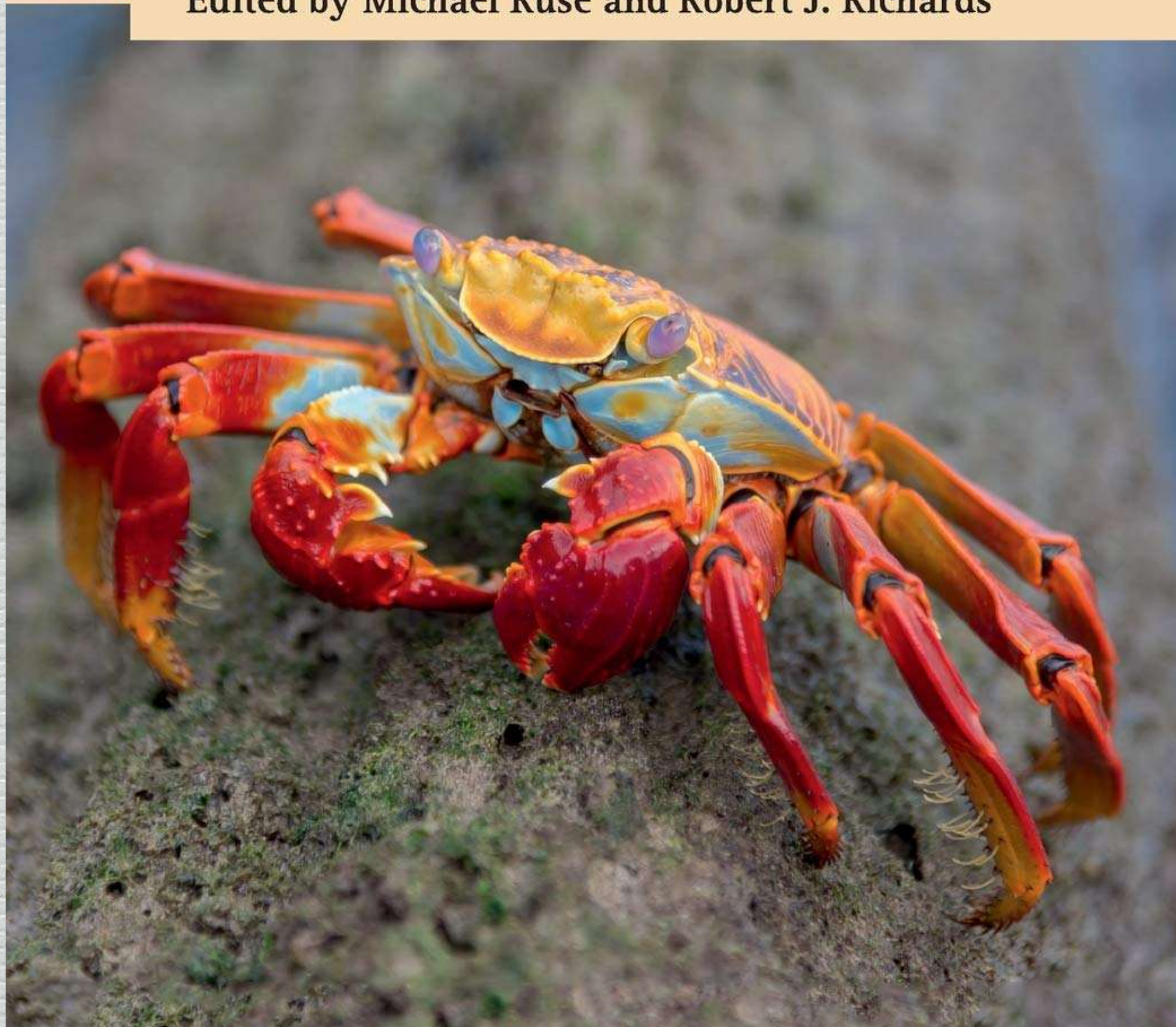
Is man the product of nature or nurture? Freedom.

Darwinism, like all science strictly speaking, is deterministic. Things happen by necessity. In biology, evolution does not point to the end, but there is no escaping the struggle for life. Consider the question: Is man the product of nature or nurture? Are we the product of heredity (DNA) or experience (education)? Scientists side with nature (heredity); ordinary people with nurture (upbringing), or *both* with an emphasis on upbringing.

When we explore this question, we come up to the problem of *freedom*. *We feel free*. To the degree that we are shaped by nurture, we create ourselves. We form our characters, despite our origins. Our political life, at least in democracies, is devoted to the protection of *liberty*. I think man can only be understood within a philosophy of moral ends, as taught in ethics or religion. *Freedom removes our minds from nature, while our bodies belong to it.*

THE CAMBRIDGE HANDBOOK OF
**EVOLUTIONARY
ETHICS**

Edited by Michael Ruse and Robert J. Richards



In a material universe, where do ethics arise?

In a material universe, where do ethics arise? Modern man lives by an anti–evolutionary ethic.

Nowhere in nature do we find the kind of moral laws like the Golden Rule or the Ten Commandments. They belong to culture, not nature. Darwin held that ethics are a customary, human behavior, selected for survivability, like the songs of birds. Some bird songs are innate (as in robins); some learned (as in larks or grey parrots). But life, according to Darwin, is basically a struggle for survival. Aggression is the rule among mature animals. Animals fundamentally follow the rule of *Kill or be killed*. Animal groups are ordered by a dominance hierarchy — the right of the stronger. Man follows the same rule in war, crime, and juvenile delinquency.

Human rules of social behavior evolved in small cooperative hunting groups. Men are aggressive toward prey and rival groups, respectful among kindred and emerging society. In civilization, man tries to replace the right of the stronger by *justice*, as Plato taught. He follows *mores* (customs) or moral rules taught by religion or philosophy, even Existentialism. We admit that we belong in nature to the degree that the natural ethic is to be stewards of nature. No animal assumes responsibility to save the biosphere. Human ethics are “natural” to a degree. Immanuel Kant held that the moral law is inborn (like innate bird songs); it is not learned. That’s why one will rush into danger, without deliberation, to save a child at risk of one’s own life. We refuse to follow the ethics of animals; we keep an *anti-evolutionary ethic*. In modern society, man’s fundamental rule is *compassion*, respect for *human rights*. Such an ethic has consequences that soon land us in eugenics and human engineering. The “unfit” are no longer removed by natural selection.



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Descartes is responsible for this stark view: bodies belong within “extended” matter; souls are utterly separate, distinguished only by “thought.” This view has made possible biology, the science of life, and modern medicine. Soul, as distinct from body, has generally been debunked. There is no “ghost in the machine,” and certainly no immortal spirit to live on in heaven or hell.

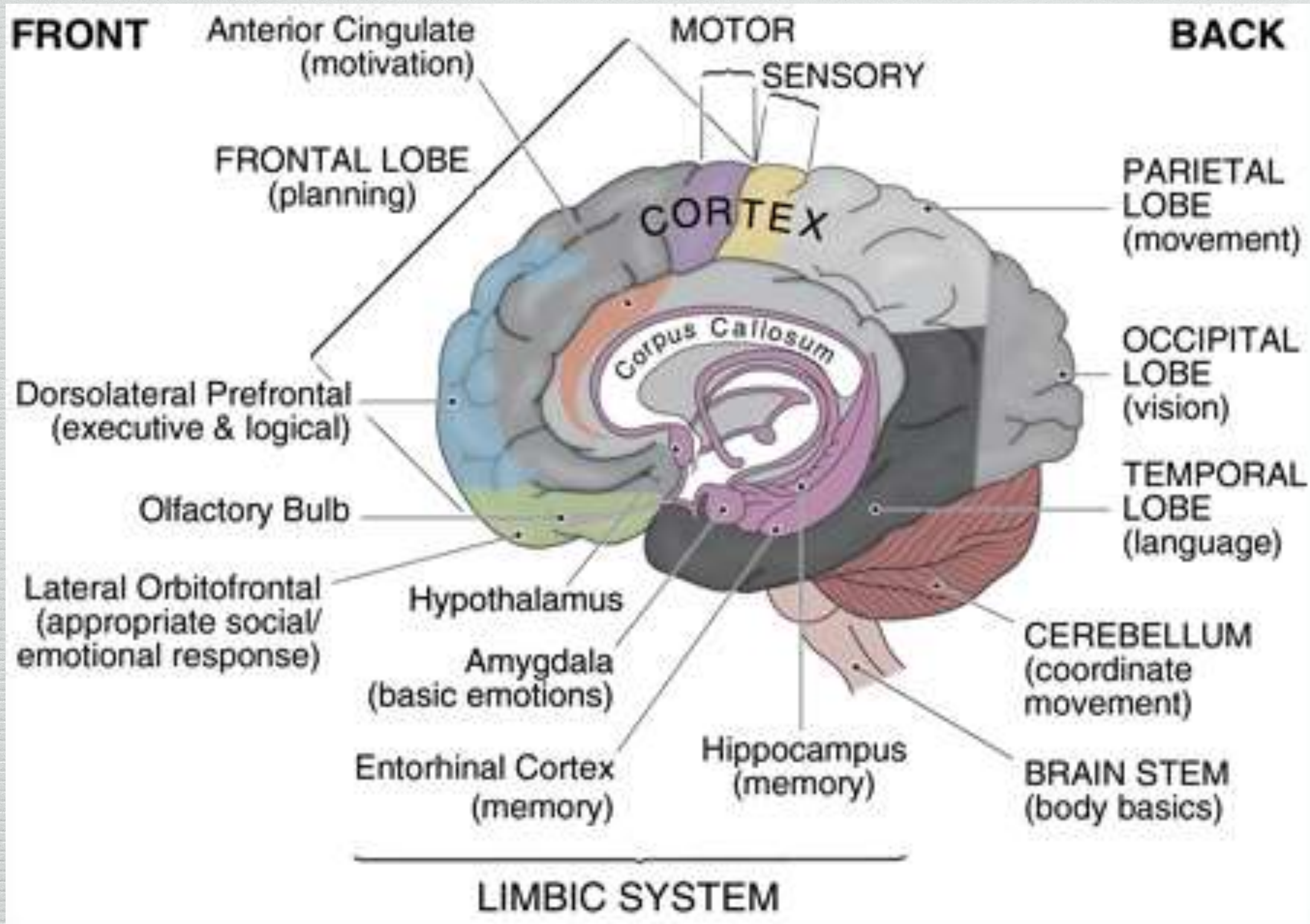
Synonyms of “soul” are psyche, mind, consciousness, spirit, as in the French *esprit*, which means mind. I have found intelligible Aristotle’s view that soul (psyche) is not matter, number, nor harmony; soul is *cause of body*. It makes the body go. I admit that’s vitalism. If soul did not exist, where would be the seat of freedom? Viewing the body as a machine, which like an automobile can fall into disrepair, has made possible modern medicine, but it has also contributed to the coldness of hospitals.



**Medieval and Modern Medicine.
Ospedale di Siena (1440 A.D.). Modern Hospital ICU (2020)**

Medieval and modern medicine.

Ancient and medieval medicine could do little to help the sick except pray, keep patients clean, and prescribe rest. By the Enlightenment of the 18th century, hospitals became places to study diseases. The bedside manner of caring physicians became changed into the physician's "gaze" into space as they measured bodily conditions and consulted symptom books. Morphology, the study of anatomy, succeeded into physiology, the study of bodily functions. The germ theory of medicine of Louis Pasteur and Robert Koch completed the revolution of physical medicine, marked by vaccinations and the introduction of such technology as the stethoscope, X-rays, computed tomography, MRI (1977), PET (2000), antibiotics, and big business (as of Merck, who mass produced penicillin in time for D-Day, 1944). But there are dangers as disease organisms evolve resistance to antibiotics, and the drug culture undermines natural health.



Psychology. The brain as a machine.

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How can there be a science of the soul — psychology — since man is free? Mind or spirit or soul seems wholly mysterious. How *mind* emerges from the electro-chemical processes of the neurons across their synapses remains unexplained. Modern psychology does not clearly distinguish body and soul, as shown by its interest in brain physiology. The brain, like the body, can be treated like a machine. The brain consists of 86 billion neurons, at latest count — not 100 billion, the number of stars in the Milky Way. Each neuron has one axon, to which may be attached as many as 1,000 dendrites from other neurons. The complexity of interconnections still baffles neural science. Vision, will, memory, imagination, creativity are where the philosophers have left them.

What is the relationship between **mind** and **brain**? “Mind” is as yet undemonstrated by neurology. For instance, neurologists have identified the motor cortex of the brain, but have yet to discover how the original nervous impulse *arises* in a neuron. *Will* remains mysterious. So does *freedom*. A very good demonstration of the reality of freedom is in the marriage vow. One has a choice: “Do you take this woman to be your lawfully wedded wife?”

The behaviorists have had great difficulty demonstrating definite, rational patterns of human action that could be ascribed to natural laws. J.B. Watson, expressly omitted consciousness from his study of human behavior. He admitted, “*If mind acts on body, then all physical laws are invalid.*” I take that as an admission of human freedom. The subject of our science may follow habit or custom or military discipline in an army, but he remains free and often acts spontaneously. Historians know this.

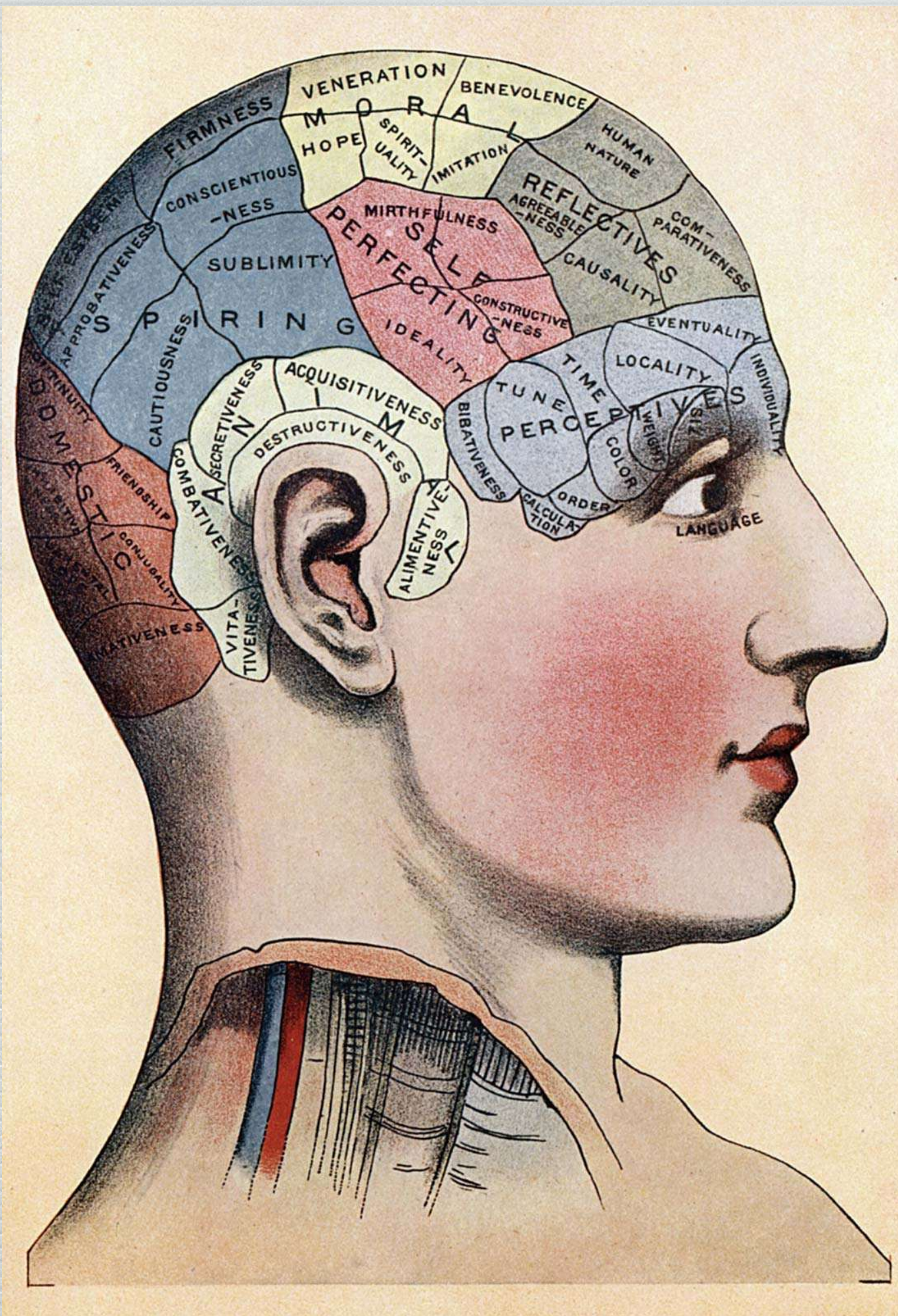


Man evolved in a material universe, struggling for survival like the animals.

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Human nature is based on brain, organic inheritance, evolutionary origins. Modern science does not see human nature as creation in the image of God, or distinguished from the animals by reason. In a material universe, the neurophysiologist has taken the place of the philosopher for advice on ethics and politics. *Evolutionary psychology* has become our guide to social progress. The political implication is that man must take up the role of nature — play God. We are finding this plain implication very difficult. The materialist interpretation has led to, beside historic benefits, great errors and cruelty to man: phrenology, race theory, social Darwinism, psychiatry based on drugs, and modern war.

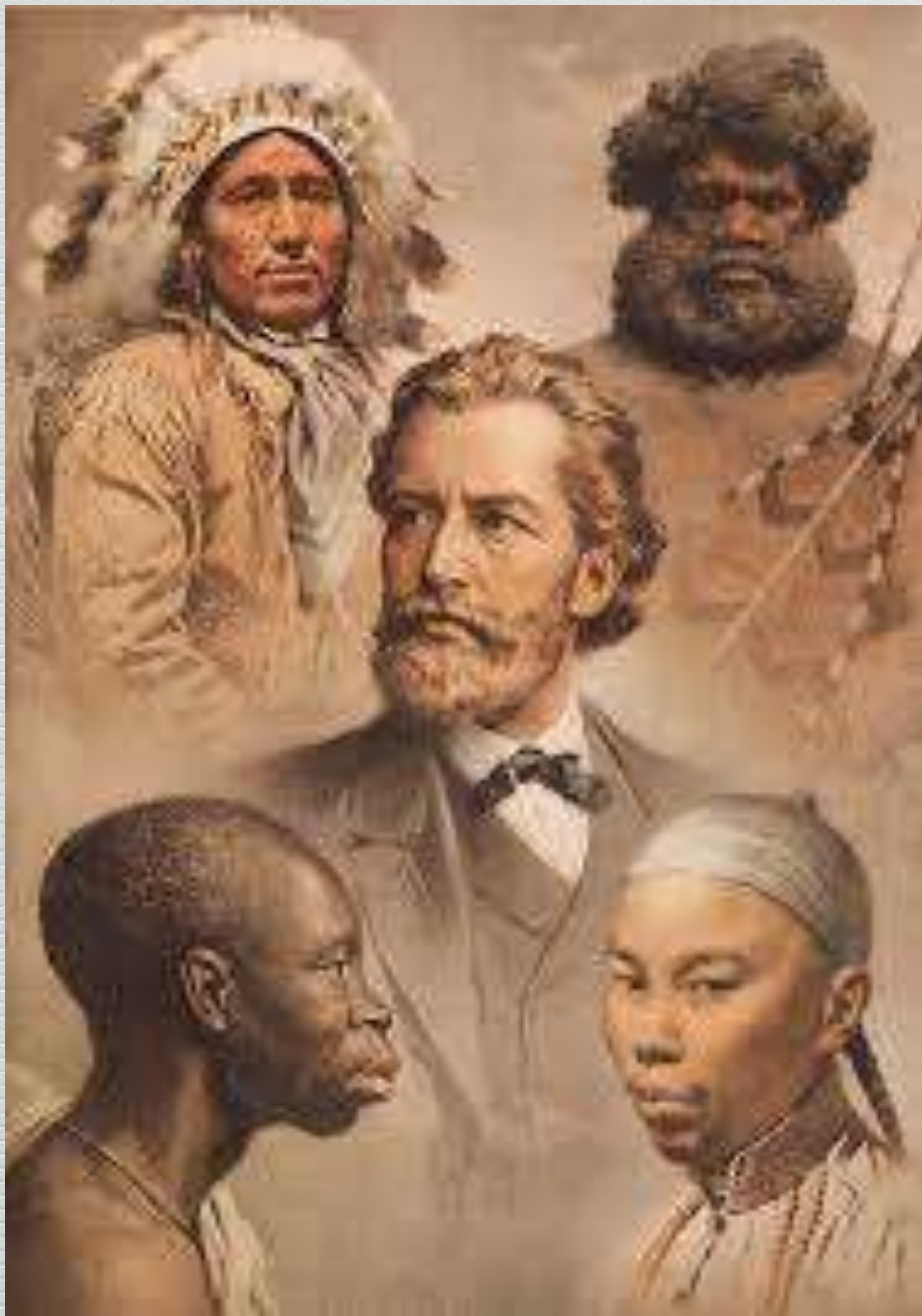
(To save time, skip errors and abuses and go to Freudian psychology.)



Phrenology.

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Phrenology (from the Greek for heart or mind, φρήν) was an attempt in the 19th century to demonstrate that the brain (actually the skull) reveals mental functions. It was exposed as pseudoscience, since the skull is not shaped by the underlying brain. But more fundamental claims *were* endorsed by orthodox science. *Brain structure* (if not skull) *does* influence behavior. Paul Broca identified the area that, if damaged by stroke, results in loss of ability to speak (1861). That had implications for memory, vision, music, etc. Evolutionists generally found that *size* of brain corresponds to intelligence (fish, reptiles, mice, man). The human brain weighs about 3 lbs.; that of whales, 11 lbs. What do whales use all that brain power for?



Physical anthropology and race theory

Physical anthropology and race theory.

Comparison of man with apes began in the 17th c. By the 19th, the theory of race was well advanced in the context of European imperialism. Dark-skinned (“colored”) men were invariably treated as inferior to pale-skinned (“whites”). Exceptions were added for the pale Irish, Jews, gypsies, and homosexuals. Darwin shunned comparisons til *The Descent of Man* (1871). H.H. Huxley openly demonstrated close relationships between humans and apes. The common ancestor of Homo and Pan is now thought to date from 6 MYBP.

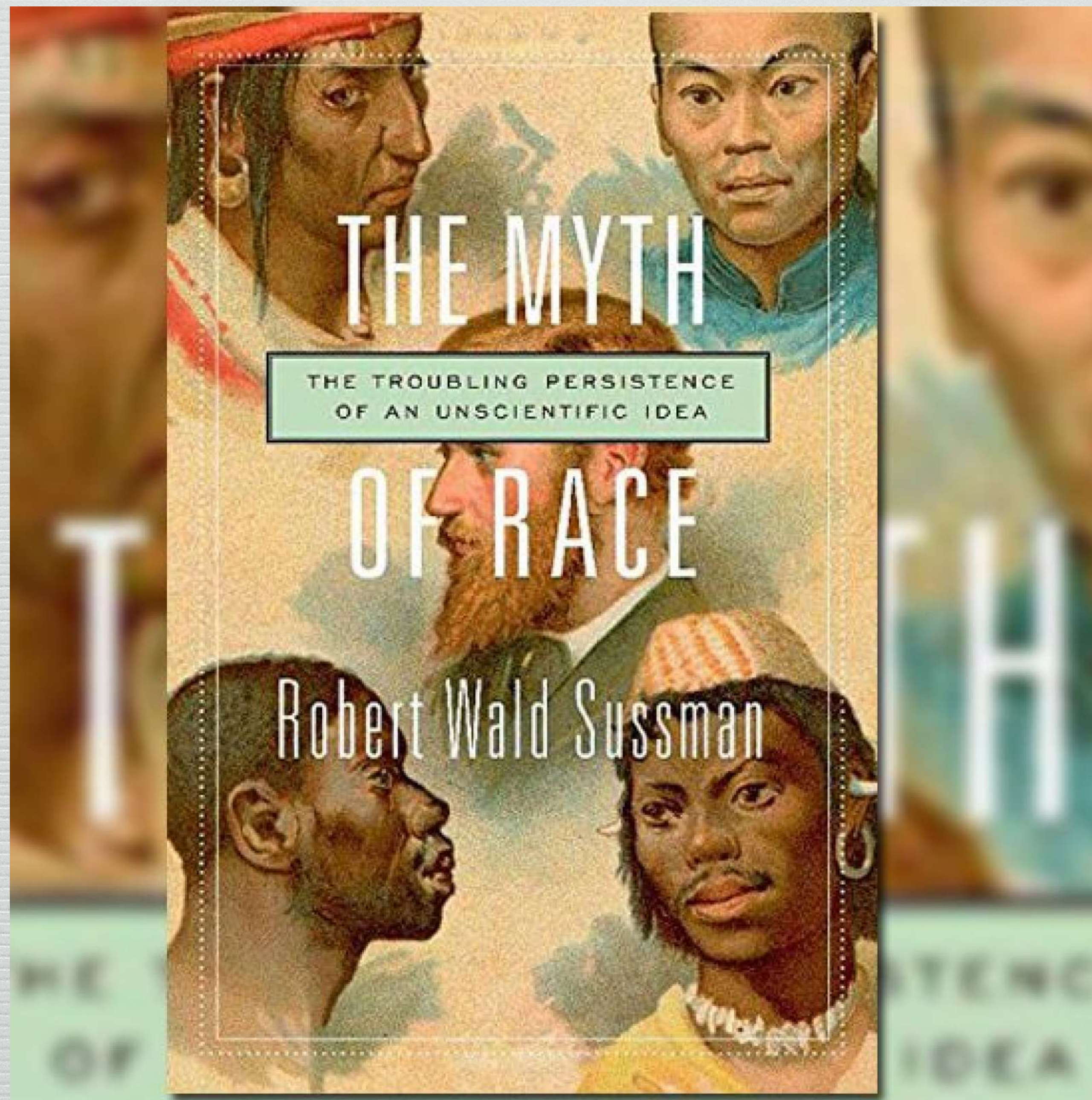
The popular notion of evolution as a ladder, culminating with man, easily led to racism. Reality is a *fan* of adaptation. Clams lasted 65 MY; ammonites, 240 MY. Very successful. *Homo sapiens* has existed for only 300,000 years. “Race” would mean a subspecies. A *species* is a group that cannot or will not breed. All human races breed true. Hence, races do not exist. 19th c. anthropologists treated “savages” as relics of development compared to whites in industrial civilization. “Races,” then, were breeding populations stuck at lower levels of *technology*.



Social Darwinism.

Social Darwinism.

The “struggle for survival” was taken by Herbert Spencer as the motor of progress. He called it the “survival of the fittest,” though survival of the *fitter* would seem more accurate. Darwinism became so successful that Spencer and others applied it to capitalism and imperialism in the Victorian era. Lamarkism, the survival of acquired characteristics, lent itself, too, to such a conclusion, and Darwin himself, before Mendelian genetics complemented evolution in the 1930s, thought Lamarkism made sense. One could call 19th century imperialism “social Lamarkism”! Two errors — evolution applied to capitalism and Lamarkism — combined as the capitalist ideology for exploitation, profit taking, conquest, and extermination. Military writers foresaw war to determine who should dominate Europe. War and capitalism are very far from the kind of struggle Darwin knew — plants for light, birds for seeds, wolves for coyotes intruding on their territory. Social Darwinism reflected ideology, not the other way around. Hence, we call it pseudo-science. Policies of imperialism were chosen for historical and political reasons.



Cultural anthropology.

Cultural anthropology.

Darwin adopted the materialist view of mind. He saw instincts (inherited behaviors) as formed by evolution. Social instincts (adaptations) were the bases of *mores* (customs), ethical systems. Until genetics clinched natural selection (1930s), biologists still accepted Lamarckism and its scale of development toward the white man. The first step to dispel racism was contributed by embryology. Ernst Haeckel and E.D. Cope's recapitulation theory confirmed the theory of evolution, but found no human races. In a phrase often confusing to students, "Ontogeny recapitulates phylogeny." That means the formation of the individual in the embryo repeats the history of the human race.

20th c. anthropologists, like Franz Boaz and Ruth Benedict, treated cultures as equals. Boaz and Benedict in the end discredited racism. Kwakiutl Indians or Englishmen were equally successful in their environments. Their view was more consistent with Darwin's theory, for cultures were *adaptations*. Full rejection of racism came, not with rational persuasion, but with defeat of Nazi Germany in World War II. Humanity turned with horror from the implications of racism.



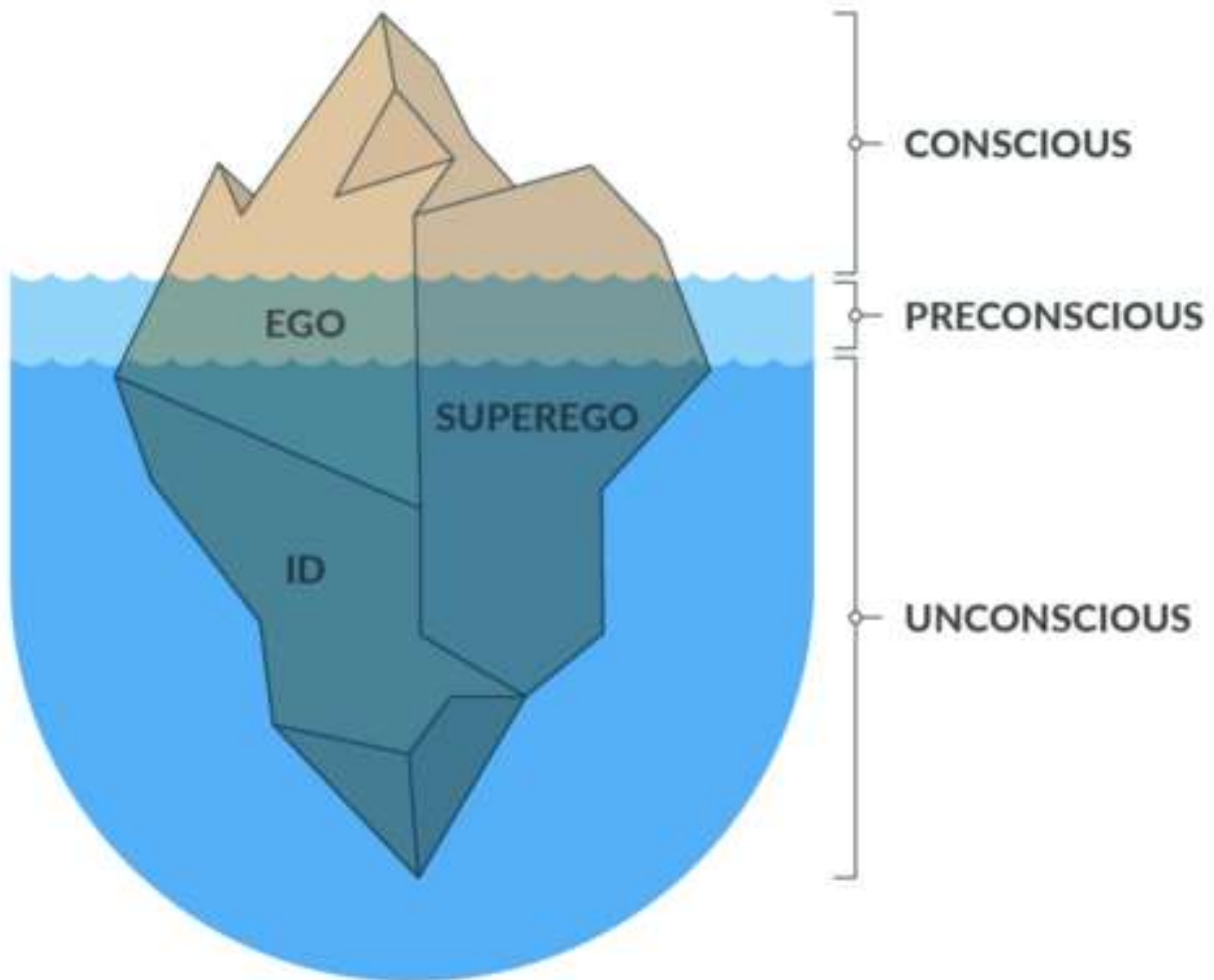
End of racism.

End of racism.

The pseudoscientific theory of original Aryan racial migrations dominated 19th century imperialism, after Judge Wm. Jones discovered that Sanskrit was closely related to Greek (1786). Francis Galton, after exploring Africa, concluded that blacks were inferior. Hence, the science or art of eugenics [εὐγενής, well born]. Rudyard Kipling, poet of the “white man’s burden,” justified the British Empire. The theory was known to Wagner and Hitler, even to H.G. Wells, who picked it up from established philology and physical anthropology. From the original greatness of the Aryans it was an easy step to the inferiority of the Jews.

The turning point did not really come until World War II, when the Japanese (a reputed yellow race) defeated the British and Dutch (white) in great battles. Blacks in India, Asia, and Africa learned the lesson. Whites could be defeated. Racism was finally ended by the revolt of colonized “colored” people against “white” imperialists, marked by Indian independence, 1947. It was ended by correction of anthropology and revival of natural law (law of nations). The culmination of this trend was the Universal Declaration of Human Rights (1948).

Freud's Model of the Mind



Freudian psychology

Freudian psychology began reversal of progressive view of man at top of ladder.

Sigmund Freud began his career as a physiologist. He became convinced that materialism offered no cures. But he retained physical concepts: the psyche is a *kathexis*, a concentration, of energy [κάθεξις]. That he was a physician is key to his psychology. Freud aimed to cure afflictions (neuroses, psychoses) in repressed Viennese society. The cure was to help the patient acquire *self-knowledge* as repressed memories were revealed by psychoanalysis. His science is a theory of *pure mind*, unmixed with body: Superego, Ego, Id — what he called the “topology of mind.” The subconscious mind (aggression, sex) is barely controlled by the conscious (reason) — Id by Ego. *Man is a savage, not just the colored people in the imperial conquests.*

But psychoanalysis as treatment was very tedious and expensive. Freud’s followers all split from the master, starting with C.G. Jung. Freudianism was liberating but it was so vague compared with reductionist materialism that it has not been accepted into the academic departments of psychology.



Psychiatry

Psychiatry now treats mental disorders with chemicals (drugs).

Psychiatry is the medical application of psychology [healing of the soul (ψυχή ἰατρός)]. Mechanistic psychology has led to the legal — and illegal — drug culture. Before psychoactive drugs arrived in the 1950s, psychiatry subscribed to the Freudian view that mental illness had its roots in unconscious conflicts, usually originating in childhood, that affected the mind as though it were separate from the brain. When drugs like Thorazine (a tranquilizer found useful in treating schizophrenia) arrived in 1954, psychiatry began to shift to its current view that mental illness is caused primarily by chemical imbalances in the brain. Prozac (an antidepressant, 1987) accelerated the trend. Hence the great recent expansion of mental illnesses and of prescription drugs to counter them. *The Diagnostic and Statistical Manual* of the American Psychiatric Association is now in its fifth (2013) edition. It lists 18 major categories of disorders. Hence has come an “epidemic of mental disease.” By 2003, Some 46% of adults had been diagnosed with at least one mental illness, such as disorders of anxiety, mood, impulse control, and substance abuse. Prescriptions are now routine for children. When disorders are so common, we have lost sight of *disease*. The drugs have escaped to the street, in what seems to be reductionist materialism run amok.



Modern, industrialized, nuclear war.

Modern, industrialized war has been made possible by modern physics, chemistry, and their technologies.

Not even in the times of the ancient Roman and barbarian wars nor of the Mongol campaigns of Ghenghis Khan and Tamerlain, has so much death and destruction been visited upon humanity as by modern science. Churchill called it “the lights of perverted science.” He meant the ever more fiendish scientific design of weapons of war, produced massively by modern machine industry. Nuclear weapons have the potential to destroy all human civilization and most of the biosphere.

Albert Einstein was once asked if atomic bombs would be used in the next world war. “I do not know if they will be used in World War III,” he replied. “But if they are, I can predict that World War IV will be fought with clubs!” Isaac Azimov said by the 1960s, “Science, which up to the end of the 19th century had seemed an instrument for creating Utopia on earth, came to wear a mask of horrid doom for many men.” He added, “We are gaining the knowledge; science is giving us that. Now we need wisdom as well.”



Modern Eugenics.

Modern Eugenics.

Even though the original eugenics movement was discredited by the Nazi euthanasia program and the genocidal “Final Solution” for the Jews, eugenics remains scientifically possible, even attractive. If natural selection is prohibited by our anti-evolutionary ethic from weeding out maladapted human beings, artificial selection will become necessary. We are really going to have to “play God.” Humans have been trying for thousands of years to improve the species, as potential parents choose their marriage mates. If medicine can eliminate genetic diseases or family infirmities, parents will be attracted. “Dial a baby.” So reopens the door for abortion and genetic engineering.



Emergence

Conclusion: Emergence. I look forward to some kind of wiser science, tempered by morality and religion. It is possible that a new religious synthesis will emerge, like that of the 13th century synthesis of Greek science and Christian religion, or the 8th century Muslim rescue of Greek philosophy, but I can only imagine it growing out of the progress of modern empirical science and the search for world peace. War — and the diversion of science to war — must be abolished by some kind of political union of humanity and thus the establishment of the rule of law on Earth. Psychiatry must get beyond the treatment of symptoms by drugs to the eradication of causes of mental disorders within society. Psychology, which barely distinguishes between soul and body, must rediscover human freedom and its degrees among animals. Freudianism, a science of pure mind, makes more sense. We will never find natural laws of human conduct. An anti-evolutionary ethic is with us forever. Hence, some form of eugenics is inescapable in order to find a substitute for natural selection. Medicine can relearn the care of the sick while it continues to eradicate material diseases. Racism or belief in human subspecies is scientifically untenable and morally condemned. Darwinism, like the chemical basis of life, is well established, but it is possible that some kind of intelligence will be found at the level of metabolism, not by the invisible hand of God, but by living organisms as wholes. The new theory of biological *emergence*, as I understand it, is a new hypothesis of evolution — where change comes not simply by selection of chance variations of progeny, but by guidance of the whole complex organism, somewhat like the Gaia hypothesis but on a cellular scale. See Pier Luigi Luisi, *The Emergence of Life: From Chemical Origins to Synthetic Biology*, 2006.