

Is evolution's greatest triumph its worst blunder?

Of all the dazzling achievements of evolution, the most glorious by far is the emergence of the advanced human brain, especially the prefrontal cortex. Homo sapiens (the wise humans) are without doubt the most transformative development in the consequential annals of evolution. It was evolution's spectacular "moon-shot." Ironically, it may also have been the seed of its destruction.

The unprecedented growth of the human brain over the past 7 million years (tripling in size) was a monumental tipping point in evolution that ultimately disrupted the entire orderly cascade of evolution on Planet Earth. Because of their superior intelligence, Homo sapiens have substantially "tinkered" with the foundations of evolution, such as "natural selection" and "survival of the fittest," and may eventually change the course of evolution, or even reverse it. It should also be recognized that 20% of the human genome is Neanderthal, and the 2022 Nobel Prize in Physiology or Medicine was awarded to Svante Pääbo, the founder of the field of paleogenetics, who demonstrated genetically that Homo sapiens interbred with Homo neanderthalensis (who disappeared 30,000 years ago).

The majestic evolution of the human brain, in both size and complexity, led to monumental changes in the history

of humankind compared to their primitive predecessors. Thanks to a superior cerebral cortex, humans developed traits and abilities that were nonexistent, even unimaginable, in the rest of animal kingdom, including primates and other mammals. These include thoughts; speech (hundreds of languages), spoken and written, to communicate among themselves; composed music and created numerous instruments to play it; invented mathematics, physics, and chemistry; developed agriculture to sustain and feed the masses; built homes, palaces, and pyramids, with water and sewage systems; hatched hundreds of religions and built thousands of houses of worship; built machines to transport themselves (cars, trains, ships, planes, and space shuttles); paved airports and countless miles of roads and railways; established companies, universities, hospitals, and research laboratories; built sports facilities such as stadiums for Olympic games and all its athletics; created hotels, restaurants, coffee shops, newspapers, and magazines; discovered the amazing DNA double helix and its genome with 23,000 coding genes containing instructions to build the brain and 200 other body tissues; developed surgeries and invented medications for diseases that would have killed millions every year; and established paper money to replace gold and silver coins. Humans established governments that included monarchies, dictatorships, democracies, and pseudodemocracies; stipulated

continued on page 10



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doi: 10.12788/cp.0301

The unprecedented evolutionary expansion of the human brain also has a detrimental downside

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educational partnership with

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continued from page 5

constitutions, laws, and regulations to maintain various societies; and created several civilizations around the world that thrived and then faded. Over the past century, the advanced human brain elevated human existence to a higher sophistication with technologies such as electricity, phones, computers, internet, artificial intelligence, and machine learning. Using powerful rockets and space stations, humans have begun to expand their influence to the moon and planets of the solar system. Humans are very likely to continue achieving what evolution could never have done without evolving the human brain to become the most powerful force in nature.

The key ingredient of the brain that has enabled humans to achieve so much is the development of an advanced cognition, with superior functions that far exceed those of other living organisms. These include neurocognitive functions such as memory and attention, and executive functions that include planning, problem-solving, decision-making, abstract thinking, and insight. Those cognitive functions generate lofty prose, splendiferous poetry, and heavenly symphonies that inspire those who create it and others. The human brain also developed social cognition, with empathy, theory of mind, recognition of facial expressions, and courtship rituals that can trigger infatuation and love. Homo sapiens can experience a wide range of emotions in addition to love and attachment (necessary for procreation), including shame, guilt, surprise, embarrassment, disgust, and indifference, and a unique sense of right and wrong.

Perhaps the most distinctive human attribute, generated by an advanced prefrontal cortex, is a belief system that includes philosophy, politics, religion, and faith. Hundreds of different religions sprouted throughout human history (each claiming a monopoly on “the truth”), mandating rituals and

behaviors, but also promoting a profound and unshakable belief in a divine “higher being” and an afterlife that mitigates the fear of death. Humans, unlike other animals, are painfully aware of mortality and the inevitability of death. Faith is an antidote for thanatophobia. Unfortunately, religious beliefs often generated severe and protracted schisms and warfare, with fatal consequences for their followers.

The anti-evolution aspect of the advanced brain

Despite remarkable talents and achievements, the unprecedented evolutionary expansion of the human brain also has a detrimental downside. The same intellectual power that led to astonishing positive accomplishments has a wicked side as well. While most animals have a predator, humans have become the “omni-predator” that preys on all living things. The balanced ecosystems of animals and plants has been dominated and disrupted by humans. Thousands of species that evolution had so ingeniously spawned became extinct because of human actions. The rainforests, jewels of nature’s plantation system, were victimized by human indifference to the deleterious effects on nature and climate. The excavation of coal and oil, exploited as necessary sources of energy for societal infrastructure, came back to haunt humans with climate consequences. In many ways, human “progress” corrupted evolution and dismantled its components. Survival of the fittest among various species was whittled down to “survival of humans” (and their domesticated animals) at the expense of all other organisms, animals, or plants.

Among Homo sapiens, momentous scientific, medical, and technological advances completely undermined the principle of survival of the fittest. Very premature infants, who would

have certainly died, were kept alive. Children with disabling genetic disorders who would have perished in childhood were kept alive into the age of procreation, perpetuating the genetic mutations. The discovery of antibiotic and antiviral medications, and especially vaccines, ensured the survival of millions of humans who would have succumbed to infections. With evolution's natural selection, humans who survived severe infections without medications would have passed on their "infection-resistant genes" to their progeny. The triumph of human medical progress can be conceptualized as a setback for the principles of evolution.

The most malignant consequence of the exceptional human brain is the evil of which it is capable. Human ingenuity led to the development of weapons of individual killing (guns), large-scale murder (machine guns), and massive destruction (nuclear weapons). And because aggression and warfare are an inherent part of human nature, the most potent predator for a human is another human. The history of humans is riddled with conflict and death on a large scale. Ironically, many wars were instigated by various religious groups around the world, who developed intense hostility towards one another.

There are other downsides to the advanced human brain. It can channel its talents and skills into unimaginably wicked and depraved behaviors, such as premeditated and well-planned murder, slavery, cults, child abuse, domestic abuse, pornography, fascism, dictatorships, and political corruption. Astonishingly, the same brain that can be loving, kind, friendly, and empathetic can suddenly become hateful, vengeful, cruel, vile, sinister, vicious, diabolical, and capable of unimaginable violence and atrocities. The advanced human brain definitely has a very dark side.

Finally, unlike other members of the animal kingdom, the human brain generates its virtual counterpart: the highly complex human mind, which is prone to various maladies, labeled as "psychiatric disorders." No other animal species develops delusions, hallucinations, thought disorders, melancholia, mania, obsessive-compulsive disorder, generalized anxiety, panic attacks, post-traumatic stress disorder, psychopathy, narcissistic and borderline personality disorders, alcohol addiction, and drug abuse. Homo sapiens are the only species whose members decide to end their own life in large numbers. About 25% of human minds are afflicted with one or more of those psychiatric ailments.^{1,2} The redeeming grace of the large human brain is that it led to the development of pharmacologic and somatic treatments for most of them, including psychotherapy, which is a uniquely human treatment strategy that can mend many psychiatric disorders.

Evolution may not realize what it hath wrought when it evolved the dramatically expanded human brain, with its extraordinary cognition. This awe-inspiring "biological computer" can be creative and adaptive, with superlative survival abilities, but it can also degenerate and become nefarious, villainous, murderous, and even demonic. The human brain has essentially brought evolution to a screeching halt and may at some point end up destroying Earth and all of its Homo sapien inhabitants, who may foolishly use their weapons of mass destruction. The historic achievement of evolution has become the ultimate example of "the law of unintended consequences."



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The historic achievement of evolution has become the ultimate example of 'the law of unintended consequences'

References

1. Robin LN, Regier DA. *Psychiatric Disorders in America: The Epidemiologic Catchment Area Study*. Free Press; 1990.
2. Johns Hopkins Medicine. Mental Health Disorder Statistics. Accessed October 12, 2022. <https://www.hopkinsmedicine.org/health/wellness-and-prevention/mental-health-disorder-statistics>