

How technology has defined human evolution

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Fortunately, the evolution of Homo sapiens was accompanied by the advancement and creation of many tools, as humans began retreating Paleolithic technology. This co-evolution between humans and technology was no simple coincidence; in fact, many scholars are recognizing the extreme significance and intricacy of this relationship. Technology has not only impacted human evolution, It has defined and enabled the evolution of Homo sapiens.

It is a fairly novel idea to consider that technology has allowed humans to evolve, especially considering all of the modern biological evidence that supports Darning's theory of evolution. However, the main physical shift that evolution granted humanity was simply that of bipedal, freeing man's hands to permit him to use tools to his advantage. As Timothy Taylor remarks In his book *The Artificial Ape*, " biological evolution had given us upright walking... Now, cultural evolution began, leading ineluctably from flint axes to silicon chips. Though the exact reasons for the development of bipedal are still highly debated, the point that Taylor makes still stands: this was the biggest and most beneficial change early humans could have experienced, as it allowed them to become innovative. The other equally noteworthy observation concerning bipedal is that this physical change did not create a spike in the intellect of humans; that process was jumpstarted by the technological possibilities available to man at this point. Taylor confirms this, "... The time that elapsed from the first beginning of upright walking some 5 million years ago to the appearance of the first chipped stone tool, saw no significant advance in the mental capacity. " It is obvious when looking through history that man's intelligence increased exponentially from the

time the first tools were made to the present day; this can especially be seen exemplifying the multitude of ancient cultures that are now to this day as some of the most advanced cultures because of the technology archeologist have excavated.

Bipedal could not have brought about this cultural change in humanity; men had no need to evolve physically any further than they already had. The use of technology is what has allowed humans to evolve into the advanced species they are considered to be. In many ways, technology allowed early 1 OFF took control over their own evolution by developing technologies," states Taylor. Among all this discussion, the biological aspects of evolution should not be moored; actually, man's physical growth has been a direct effect of man's changing mental capacity due to technology.

Though humans are significantly weaker and less physically able than many other species, we have survived, and indeed, become dominant, because, "... Our technology ensures that we need not know anything except how to use technology. " This answers the question of why Homo sapiens did not evolve in a primarily physical aspect; technology has replaced the need for adaptation, acting as a crutch to help man perform in ways that would be unimaginable without the surrounding inventions.

Put simply, " We did not need to evolve physically anymore: the era of technological civilizations had begun. " Modern technology has antiquated major parts of Darning's theory of evolution, particularly the idea of natural selection. It is commonly accepted that many people of today would not be alive if not for modern medicine, grocery stores, and other luxuries of

modern society. Technology not only began human evolution, it is now perhaps the most important factor of the species' future.

Since natural selection becomes less and less applicable, technology becomes increasingly important to preserve the eminence of humanity on Earth, and absolutely essential to man's survival. Perhaps one of the most prominent and integral pieces of this relationship is the rise of computer technology. The rapid innovations that have occurred since the creation of these machines have affected humanity more profoundly than most people realize. " The transformation of the computer from a room-sized ensemble of machinery to a handheld personal device is a paradox... ND, as such, an illustration of technological determinism: the driving of social change by technology. " Personal amputees have arguably been able to bring about more social change than any other single invention in the history of the human race. Allowing each individual person to have news and social media at their fingertips, constantly being influenced by a smattering of cultures and ideas, able to interpret and learn at their own leisure provides not only the basis for social change, but for accelerated social change and cerebral growth: "... T [the computer] is a force of human evolution, opening new possibilities for our minds, simultaneously freeing us from drudgery. " Not only does Michael Crimmon's quote here support the evolutionary purpose of computers, he points out that they, " free us from drudgery," which enables humans to pursue other disciplines, thus creating a cycle through which man will keep evolving. To put it another way, "... The machine is there; it doesn't have to be called in or awakened, and it will read your X-ray just as freshly as it would have that morning. As technology becomes more efficient, the

need for humans to perform mundane, tedious, and repetitive work is steadily decreasing. While this occurs, fewer mistakes are being made in these simple tasks, replacing the flawed methods of a human machine with the consistent programming of a computer. In conjunction with one another, these two phenomena enable the species to spend luxurious amounts of time innovating and inventing, bettering the life of their fellow man, and thus furthering human evolution. It was not essential to the design of the computer to be evolutionary, however. But with the centralization of computers: " Do we construct machines that do what is technically feasible and adapt the human to their capabilities, or do we insister what humans cannot do well and try to construct machines that address those deficiencies? " It is clear from the evidence provided in the previous paragraph that scientists chose to design computers that would require humans to adapt; this can also be seen in older generations, who stereotypically do not know how to use computers because they haven't adapted to the machine's capabilities.

Since computers are now so completely integrated into people's lifestyles, human evolution becomes necessary to adapt to the ever evolving technology that has become essential to modern society. In hindsight, it was nearly inevitable that the invention of computers would bring about an accelerated cultural evolution: "... An engineer's job was not finished once a machine was designed; he or she then had to fit that device into a human context... This too is evolving rapidly. It is obvious that computers are useless without the context of humanity; without users, computers would not have any purpose whatsoever. In order to properly fit computers into a

society that is already quickly evolving due to earlier technology, it was necessary for engineers to make the computer an evolutionary technology. Many worry that because of this evolutionary nature, technology will eventually become smarter than the humans that created it; Timothy Taylor adamantly disagrees: " It seems that artificial intelligence is human intelligence.

The idea of human versus technology is wrong. The vision of computers becoming far more intelligent than 'us' is misleading because they are us too. " Because the evolutions of both humans and technology have been so intertwined with one another, it is hard to make the distinction between the two; not because humans are technology, or vice versa, but because the evolutionary Journeys the two have experienced are the same. Computers are 'human' in the sense that without them, Homo sapiens would not be as evolved as they are today.

In fact, considering the role computers play in society, humans will not be able to survive without computers in the future. The role computers play in the survival of the human race becomes particularly apparent when one examines space exploration. Many people consider space travel to be irrelevant in the grand scheme of things; Anna's current budget exemplifies that if nothing else. A large umber of individuals misinterpret expeditions into outer space as a sort of scientific vacation; something scientists do for fun rather than an essential evolutionary tool to ensure humanity survival.

As science communicator Lee Pulled so eloquently states, " It's [space exploration] about culture and the human desire to evolve and expand, and

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to protect ourselves from catastrophes. " Humanity exploration and understanding of its place in space is essential to survival and expansion as a species. Not only does this exploration increase the chances of eventual settlements in outer space, it creates endless possibilities to further the intelligence of an entire species. Most prominently, a concept known as the overview effect has the potential to change how humanity perceives the universe.

The phrase was first coined by Frank White to describe a phenomenon many astronauts had commented on. Essentially, when one is out in space and sees the entirety of humanity on what is obviously a blue and green rock, one will gain incredible amounts of perspective. For in space, constantly exposed to this reality: " People who live in space will take for granted philosophical insights that have taken those on Earth thousands of years to formulate. They will start at a place we have labored to attain over several millennia. White comments extensively on how this perspective will bring unity to humans, to the extent that warfare will no longer exist among peoples of the Earth. This unity is an evolutionary device in itself, preserving human life more effectively than life is being preserved in the present day. The amount of knowledge to be gained from space exploration, and thus understanding of our existence in space, is not only evolutionary in the cerebral sense; it is a way of ensuring our survival. This insurance seems to directly contradict parts of Darwin's theory of evolution.

In fact, settlements in space would make a mastery of humanity own evolution a distinct possibility, as White observes, "... Establishment of permanent, self-sustaining colonies of humans off-Earth... Will make human

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life forever unalienable. " To make a species 'unalienable' is to completely master Darning's theory; humanity will have evolved to the point that extinction will have become an archaic word. In addition, retreating a presence in space would by no means be an accidental mastery of evolution, but an intentional mapping out of humanity own evolutionary path, as White points out: "...

Space exploration is a major step in a long evolutionary Journey, which we humans will be making not only for ourselves, but for the evolution of the universe itself. " The idea that the path humans choose for themselves will affect the evolution of the entire universe is profound, logical, and completely supports the idea that space exploration is a key of sorts to unlocking the mysteries of the practical applications of evolution. That evolution is something humanity can control once out of the Earth's atmosphere is an idea that will change the way an entire species thinks of the term, " survival".

If space exploration were simply a scientist's daydream, it would not have such practical applications to humanity present, nor be the very definition of their future. It seems almost contradictory that a species without a logical, natural reason for existence should have a clear to ensure their ultimate survival. Technology has quite literally saved the future of humanity, assuming it will e applied in the necessary ways, defining extinction as a slight possibility rather than an imminent inevitability.