# The Modern Myth and the Fall of Humankind

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The possibility has been raised that the 21st century will be the last in which Homo sapiens sapiens reigns over the Earth as a dominant species. There is a paradox present in this claim. The argument is not that some cataclysmic change in the natural environment will befall the Earth, or that someone will cause some disaster out of malice. Rather, it is that the species, which has not undergone any significant changes since its appearance on the planet, will face a situation beyond its abilities to cope with in its current biological state as a result of the accelerating developments currently under way with technology. And this, it is said, will happen before the century is out. There is another, slightly different aspect to this paradox, namely that it arose without any deliberate intent---merely through everyone on the planet today working hard at what they have been given to do. They have simply failed to examine what they are doing with a broader perspective and deeper consideration.

The paleontological evidence on the history of life on the planet makes it clear that extinction is the fate of all species. What draws more of our attention is the way in which extinction occurs. A species seems to abruptly appear and flourish without undergoing any major changes, in a state of nearly certain identity, only to vanish suddenly. This is how things are said to look on the scale of geological time. Of course, this kind of fossil evidence does not fit with the gradual mechanism of chance mutations and natural selection propounded by Darwin. While not entirely absent, fossil species that show signs of incremental change are exceedingly rare exceptions to the rule. In 1940, Richard Goldschmidt introduced the concept of the "hopeful monster" to explain the situation that actually unfolded on Earth. What it says is that massive mutations occur systematically and in an organized fashion over a brief period of time for reasons that have yet to be ascertained. After reaching adulthood out in the periphery, a new species comes all at once to supplant the previously established species at the center. It may be that the creative potential in life and matter manifests itself rapidly under the right circumstances. If it is difficult for the current scientific world view to accept a situation that can only be described as "the manifestation of creative potential," then this is merely a limitation of science, with its characteristic limited perspectives of materialism, machinism, and reductionism. There is no reason why nature must be subordinated to the manmade system of science.

When we consider the history of life on the planet, the possibility of life elsewhere in the universe, and our current situation, two situations facing us at this moment stand out.

One is our isolation on the planet we call Earth. The solar system is unquestionably a late starter compared with the older stars in the Milky Way. The estimated age of the universe and our galaxy is 13.7 billion years, while the solar system is 4.6 billion years old. If planets orbiting other stars experienced similar circumstances to Earth's, those alien civilizations might be billions of years ahead of ours. "A sad spectacle," said Thomas Carlyle of human expectations in the 19th century. "If they are inhabited, what a scope for misery and folly. If they not be inhabited, what a waste of space." But no observation has ever been reported that astronomy would be obliged to interpret as being artificially produced. This is known as the Great Silence Problem, and it is the only evidence we have regarding higher life forms in the universe. This problem is certainly perplexing to a

human race that pledged to become a cosmic civilization with the advent of rocket technology. Despite our unquestionably being late starters as life forms in the universe, we nevertheless appear to be alone. And if we consider recent predictions that life on Earth will turn out to be nothing special from a cosmic standpoint, then perhaps they, too, are isolated on their planets.

The other situation is the crossroads at which humankind currently stands. The most significant event in the history of life on Earth is the emergence of that life. We do not know how this occurred. When we look at the state of the Earth before life appeared, however, it is apparent that it did emerge on the planet somehow. Indeed, it looks as though life appeared more or less as soon as the environment in which it could survive was established here. After the appearance of life, the next most important incident in the evolution of life leading up to us may well have been the emergence of an oxygen atmosphere through the effects of photosynthesis about two billion years ago. A highly reactive element, oxygen would have been a toxic gas to the life forms that existed over the billions of years before then. Here we find still another paradox. The organisms that invented a mechanism for neutralizing the toxicity of oxygen, which precipitated a fatal crisis for previous life forms, provided the turning point for the great advancements made by life on Earth---leading to eukaryotic cells, multicellular organisms, and the sexes. While we see reports even today contending that the lifespan of oxygen-breathing organisms is limited by the very fact of their breathing oxygen, the emergence of oxygen was undoubtedly both a fatal disaster to some of the life on Earth and an opportunity for great advancement for other organisms. Life for the crisis-stricken organisms would have been harsh indeed.

So what do I mean when I say we are now at a crossroads? As the second most important event in the history of life on the planet after the emergence of oxygen---a more significant event than the invention of photosynthesis, the Cambrian explosion, the development of the brain, the extinction of the dinosaurs due to an impact event in the late Mesozoic Era, and the dawn of humankind---I wish to point to something whose artificial emergence is poised to occur within this century. Of course, this event may conclude with merely a parable left behind to future generations about the foolishness of a modern humankind that fell into its own trap. But if it succeeds, it has the potential to be a cosmic event equal to the emergence of oxygen giving rise to evolution of life on the planet. In any event, it may be the occasion for the development of Earth life into cosmic life---albeit one accompanied by the fall of modern humankind. A leap forward for Earth life, but not for human life, which will have collapsed in the process.

And what is this event? It is humans' artificial manipulation and acceleration of substances and courses of biological evolution that were previously entrusted to nature, and the artificial production of forms of life that have been fused with machinery. Genetic engineering, robotics, information technology, nano-technology---is it not patently obvious where they are heading? If these endeavors are successful, there is a possibility that the new species that arises to dominate the Earth will possess intellectual and physical capabilities above and beyond the classification scheme of modern humankind. The paradox, however, is that this is nothing if not the ultimate fall of modern humankind. Other life on this planet is already meeting with disaster amid the human explosion stemming from rapid technological advancements in recent years. The circumstances we

encounter on the other side of the century may be as brutal as those that early life forms had to contend with when oxygen first emerged.

Among these efforts, genetic engineering in particular is already intimately connected with our lives. It has been said that the only barrier at the moment to the creation of superviruses and chimeras, human cloning, and genetic enhancement of human capabilities is the ethics of genetic engineers. There is no denying that the possibility of artificially manipulation of evolution ushers in a momentous state of affairs in something that until now has been the province of natural processes. It may not be easy for nature to try putting winter flounder genes into a tomato, but even more momentous is the staggering rate of these artificial changes compared to that of natural processes. Still more worrying is the fact that this reckless speed campaign is under way in the absence of definite knowledge even of the role of the gene.

Of course, life cannot be controlled, and there is a good chance that these efforts will mark the last time humans play with fire. One of the bases for this argument is the cosmological situation that we are confronted with, while another has to do with the misguided modern world view in which we have absolute faith. That is to say, the modern myth.

First, the cosmological situation we face is, as previously mentioned, the fact that despite our solar system being such a late starter in the galaxy, the only observation we have made of higher-order life in the universe is that of a vast, fathomless silence. The human hope of developing into a cosmic civilization began with the advent of rocket technology. In the early 20th century, Konstantin Tsiolkovsky said, “Our planet is the cradle of mind, but one cannot live forever in a cradle.” As the 21st century began, Martin Rees was still expressing a hopeful view, arguing that “the unfolding of intelligence and complexity could still be near its cosmic beginnings.” But he also added a major caveat: “Travel beyond the solar system, through interstellar space, would, if it ever happened, be a posthuman challenge.”

Nevertheless, the absence of any credible record of an earthly visit by any delegation, probe, or wanderer from an alien civilization to reflect our future as a cosmic civilization tells us that there is a major flaw with our high hopes for the future. If this kind of logical leap is permitted with regard to a single bit of evidence, we arrive at the conclusion that they are stranded on their world and we are stranded on ours. In other words, even if super-intelligence, machinery, and life forms with capabilities beyond those of humankind are possible, even if they are the hopeful monsters of the future, their failure to make the leap into becoming a cosmic civilization is the cosmological forecast that faces us right now. It may be that civilizations meet with an untimely collapse, stranded on their own planet. Is a technological civilization like ours a fleeting phenomenon that flourishes only for a moment in the universe? As Blaise Pascal put it, "The eternal silence of these infinite spaces frightens me.”

The second basis is the fact that the scientific world view that makes up the modern individual's belief system about the world is an inherent source of existential crisis for humankind. It is too much to expect to be able to change people's deeply rooted brainwashing about science in the space of a short page. But when we face up to the naked truth about science, we will discover the potential for human collapse inherent within it, as

well as the hope that by changing our mistaken world view, we may be able to change the situation.

“Observation is selection,” said Alfred North Whitehead. Selection necessarily reflects our own desires. As a result, all knowledge is inseparable from desire. To put it differently, all knowledge has an agenda. Accordingly, the attitude humans should adopt vis-à-vis knowledge is not one of faith in its objectivity, but one of proper awareness of our decisions and responsibility.

So what desire is scientific knowledge linked to? Since its beginnings, science has been a knowledge system reflecting the modern human's desire for control and domination over nature. The effects of that world view have carried on to the present in a destructive linkage with colonial rule, imperialism, capitalism, and neoliberalism. Science is not about viewing nature as it is; rather, it distorts nature according to the characteristic methods of abstraction and analysis. The perspectives of materialism, machinism, and reductionism are ideologies adopted by the scientific world view, and not at all anything demanded or supported by nature. It is to the point where it appears strange when the method of systematically fragmenting and skeletonizing nature, with its abundant diversity and interconnectedness, does not treat its object abusively or destroy it. There is nothing astonishing about the argument that more may have been lost in the long term than gained in the short term through scientific knowledge and its deeply rooted reflection of this desire of modern humans to rule over nature.

The tragedy of our era is that the life sciences of today are adopting the perspectives of materialism, machinism, and reductionism. Even in the case of inorganic matter, this perspective is merely a hypothesis without any guarantee from nature. When we separate life into parts, it is no longer life. While it may be possible in the future that a monster will emerge when the pieces are put back together, for the time being nothing is left but a corpse. In the end, humans themselves are currently devolving into dissection subjects, their very existence in jeopardy. This is the true picture of the fall of humankind due to science.

Science is a modern myth. All the principles and rules presented as tenets in science are merely simplified, abstracted models deliberately imposed by humans upon themselves, not anything shown to us by nature. Our fixation on that simplicity is just fanatical fundamentalism. How can we hope to find purpose, meaning, or value in the world with such a value-free world view that we ourselves constructed? In the words of Johann Wolfgang von Goethe: “Specialists without spirit, sensualists without heart; this nullity imagines that it has attained a level of civilization never before achieved.”

“Science, after all, is only an expression for our ignorance of our own ignorance,” said Samuel Butler. Whitehead, for his part, said that “the aim of science is to seek the simplest explanations of complex facts. We are apt to fall into the error of thinking that the facts are simple because simplicity is the goal of our quest.” Whitehead explicitly warned, “There are no whole truths; all truths are half-truths. It is trying to treat them as whole truths that plays the devil.” In other words, this was mere thoughtlessness, greed, and misapprehension owing to a surfeit of confidence in scientific knowledge in the mid-20th century, and the effects of the "era of the expert," and humans are facing an existential risk

as an uncontrolled and irreversible outcome in a situation where no one intends anything and no one takes responsibility for anything. We should pay heed to the warning of Martin Buber, who said, “The sickness of our age is unlike that of any other. . . . Shall we have to follow this path all the way to the end, to the test of the final darkness?”

What the Great Silence Problem tells us is that the Earth may be the only isolated space given to us, and that there is nowhere else for us to flee to if it is befouled by our carelessness. The silence may also be alerting us the possibility that predictions of a human future reaching out into the universe through scientific developments are nothing more than a daydream. On one hand, those developments have given us the hope of realizing limitless advancements that take humankind out into the cosmos through the control and domination of nature. On the other, they have facilitated unprecedented systematic and widespread exploitation of nature and opened up the road to our own annihilation. Recently, there has been an ironic expression of astonishment at discovering our one and only nest already contaminated---and this on a confined and isolated planet. We must realize that the abundance that a portion of humankind currently enjoys is merely the result of our plundering a nature that disappears forever once it has been destroyed. It is an unsustainable situation. All technological development has done is to make this plundering more efficient, and all science has done is to rationalize this with a misguided world view reflecting the desires of modern humans. Ernst Schumacher said, “Anything that we can destroy, but are unable to make is, in a sense, sacred, and all our ‘explanations’ of it do not explain anything.”

Of course, the future is neither fixed nor foretold. What decisions should we make, and what actions should we take as we stand at the frontier of an unknown future? When we encounter scientific discoveries and technological developments, we should make our determination according to one question: "Does it serve humanity?" This does not refer solely to the use of knowledge. Judgment must lead to action. This is the question on which our survival in this century hinges.

Another paradox we face is the fact that recognizing the ideological bias and limitations of this scientific world view---in other words, correctly perceiving our ignorance---could provide a source of hope for the future of humanity. Ahead of changes to our economic, political, and social systems, we are finding hope for the human future in the shift toward a proper world view. To me, the universe is not something indifferent, and the world is filled with meaning, with all things in it interconnected. Even, as a poet once said, the smallest grain of sand.

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