

BEYOND HUMANISM: TRANS- AND POSTHUMANISM
JENSEITS DES HUMANISMUS: TRANS- UND POSTHUMANISMUS

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Building Better Humans?

Refocusing the Debate on Transhumanism

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Science, Technology, and Democracy

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As you read this foreword, your eyes no doubt focus on the text better than would have those of our fellow humans from preceding centuries because of the technological innovations on, around, or in your eyes (glasses, contact lenses, laser surgery, etc.). Your mind is processing these words in an enhanced way as well because of your advanced diet of engineered foods and special supplements and medicines. Your understanding and awareness are enhanced through elaborate learning and information tools on or near your body, not to mention that, if you are forty years or older as you read this, your very existence is the product of hundreds of years of human modification of everything around you and all you put into your body.

It would be a mistake to conjecture that building a better human is something other than the central objective of the science we do and the policies and resources that drive that science and technology. We are creatures driven to adapt and survive on a planet of powerful natural dynamics, surrounded by a universe of even greater forces. These forces and our relationship with them over time have led us to the point in human history where we have grasped the fact that we are now a species directing and guiding – in the way that beginners do and often with many fits and starts – our own physical, social, cultural, and planetary evolution. This is now occurring at the rate and speed that it is because of conscious decisions to make our understanding of nature (science) and our adaptation to nature (technology) one of a handful of the central functions of our society. We do this through our conscious decision making regarding the resources that we allocate to this very conscious and focused set of purposeful investments and decisions.

As a consequence, we have reached the point where three questions should be asked: what are we doing, why are we doing it, and is this the outcome we want? To address these questions from the perspective of science policy, I will outline the historical development of some of our core human behaviors. As manifestations of our human limitations, after all, science policy and its close partner, technology policy, replicate fundamental aspects of our core needs and desires.

Let me reiterate the central fact that human beings are, at the end of the day, an adaptive, highly evolved product of dynamic evolutionary forces. As a highly adaptive species, we have survived and prospered through three distinct evolutionary phases. These evolutionary phases are “natural evolution,” during which we sought adaptation to our environment with primitive tools; “adaptive evolution,” which represents our movement through intensive development and use of

tools to enhance our well-being; and, most recently, “self-directed evolution,” during which we have achieved the capacity to shape not only the outcomes in our environment and, thus, indirectly ourselves but also to directly shape our organisms through self-enhancement.

Throughout human history, the coevolution of humans with other species and our adaptation to those other species, as well as to the circumstances of the physical systems around us, have been a principal driver, if not *the* principal driver, of who we are. It is a defining characteristic that we work to build a better environment around us. “Better,” of course, is a term that is subject to definition, but it is nevertheless the case that, as a species, we have worked to adapt so that we might survive. In fact, for at least the past 150,000 years, we have been shaping tools to better master our environment. Our tools may have been those to conquer animals for food or to allow us to stay warm when it was cold or to walk longer distances than our natural bodily systems would permit, but, in any event, we have been working for at least 150,000 years to advance every possible mechanism to help us shape and master our environment and our individual body’s relationship with that environment. In this period of seemingly natural evolution, we learned to adapt more quickly than most, if not all, other species, and we learned to modify ourselves as necessary for prolonged journeys and unexpected encounters with highly diverse ecosystems. This unique characteristic of humans rests at the heart of even our present science and technology policy design.

During the past ten thousand years, we have moved from being driven more in a natural evolutionary environment to what I call an “adaptive evolutionary environment” where we have been engineering animals, plants, and environments for our benefit in every possible way. Very little that we discovered in nature has been left unaltered by us either as a result of purposeful actions, accidental encounters, random acts, or pure stupidity. In any event, we have shaped for at least ten thousand years everything around us in a way that has enhanced our capacity to survive as well as our increasingly dominant role as a species on this planet. Within this context and further back than anyone can fully understand or document, technological advance has been inextricably correlated with our social and, to some extent, even physical evolution, serving as a chief determinant and driver of our progress as a species. During these past millennia, our technological experimentation has allowed us to establish an adaptive evolutionary platform for human enhancement that has allowed us to shape our outcomes and our destinies. Our most basic technologies – one need only imagine the most primitive canoes formed from hollowed-out tree trunks – have given us speed of movement, access to food and shelter, and an ability to protect our bodies and project ourselves across seemingly impassable barriers.

For no more than the past few hundred years, a new force has projected humans into a realm of previously unimaginable adaptive evolution. This force is science. Through our progressively more sophisticated and intricate understanding of nature during these past few centuries, our increasingly successful adaptation to the natural systems in which we are embedded has intensified our capacities for further self-enhancement. Evolutionary forces driven only by natural systems have become heavily complemented by enhanced competition among humans and between human societies. Through modern science, a range of industrial, military, social, and cultural competitions has been stimulated, which have produced dramatic differences in the relative adaptive success of societies around the globe. These differences are often attributed to the advancement of science, at least before the last few decades, and are also a consequence of the fact that organized science, in its early stages prior to World War II, outlined and empowered our ability to leap from an adaptive species to a self-directed species. With progress in scientific understanding, we learned how to control microorganisms harmful to humans, for example. We developed new tools to enhance human performance, such as extensions of our body that could hurtle us through the atmosphere at high rates of speed and simulate the functions of birds in terms of our ability to move up and down from a stationary location. In this sense, science empowered our capacity for high-speed, self-directed evolution.

Unfortunately, the culmination of our awakening as a species to the potential for self-directed evolution and thus self-determinative fate, I think, can be attributed to the scientific design and technological deployment in the mid-1940s of weapons of mass destruction. The weapons themselves, the processes by which they were conceived and developed, and the outcome of their use fueled the assumption, still widely prevalent in American culture and politics, that through science we could achieve nearly anything. Science could preserve us in competition against our enemies, as well as ensure the fulfillment of anything we might conceive.

It was, in fact, at this moment nearly seventy years ago, corresponding with the publication of the report "Science: The Endless Frontier," by Vannevar Bush, and the institutionalization of a fundamental national science policy, that we observe the transition from the basic operating realm of adaptive evolution to the early stages of self-directed evolution. In this sense, the period of the past seventy years marks a unique inflection point in our trajectory as a species. During these decades, large-scale public investment in science and technology corresponds to a drift toward systematic, societal-level, self-directed evolution. The basic premise for American science policy was established in the Bush report with its implicit promise that, if science was sufficiently funded, it would provide for the health and well-being of the population, extension of life for the infirm and aged, and defense of the nation by any means necessary against all threats.

As a consequence, American democracy has produced a science policy that in the past seventy years has outlined objectives such as the following for the science-and-technology community:

- (1) Enhance the quality of life for everyone.
- (2) Defeat cancer, a particularly daunting challenge because it is a natural evolutionary process driven by complex behaviors and species interactions.
- (3) Render soldiers less destructible and ensure military dominance.
- (4) Exert force and project power without risking individuals.
- (5) Transform energy and water systems to renewable and human-controlled functions, no longer reliant on the natural systems of the earth.

These objectives are, in fact, identical to those that have motivated humans for the past few thousand years. We adapt to enhance our survival and success as a species. Only now, however, humans are empowered by a rapidly moving science seemingly capable of addressing literally any challenge. It is very difficult even to characterize the scale of the impact of science on human society during the past seven decades. As we negotiate the transition from an adaptive to a self-directed evolutionary species, we are engaged in scientific activities and technological advances that can alter who we are, how we act, how we adapt, and thus how we continue to evolve.

In an effort to understand the trajectory that led us to acquire the potential for self-directed evolution, we may be inclined to retrace our footsteps in the remote past. In my estimation, however, the answers are more likely closer at hand. I would argue that our capacities for self-modification or even the creation of new life forms are natural outcomes derivative of the core driving principle of our species: adaptation. American democracy, which has among its fundamental design parameters a focus on providing for life, liberty, and the pursuit of happiness, epitomizes this imperative for adaptation. In this sense, while our collective energy and resources are necessarily heavily focused on our own continued evolutionary success through adaptation, our adaptation in a democracy inherently seeks to provide for the pursuit of happiness of all in a society of hundreds of millions of individuals.

The result of this alignment of interests is a national science enterprise focused on a cultural outcome – the pursuit of happiness – without full consideration of the impacts of science-enabled, self-directed evolution. We are already concerned about the impacts that adaptive evolution has had on our relationship with the planet, not to mention the fact that the past few hundred years of science-and-technology outcomes have produced both enormous socioeconomic benefits and challenges. We may well then consider how self-directed evolution empowered by science may produce significant social and cultural instabilities going forward.

Just as in all evolutionary dynamics, steps forward or backward require further and still-more elaborate adaptation. When pondering human transformation and enhancement in this context, one can either be chagrined or assured that science-and-technology policy in its present simplistic stage can only guarantee that our focus will be on adaptation.

Presently under consideration is a range of investments in nanotechnology, synthetic biology, geo-engineering, and other areas that will lead either to the modification of natural systems to our benefit or our own self-modification in order not to be subject to natural forces. This is the basic and fundamental purpose of the present articulation of national science-and-technology policy, at least in the United States. So, then, what is, in fact, the question regarding transhumanism and science-and-technology policy? Transhumanism as a concept is empowered by the outcome of seventy years of focused science, preceded by hundreds of years of organized science, preceded by thousands of years of purposeful adaptation and hundreds of thousands of years of natural adaptation. How is it that we have some desire now to think that, in fact, we are not who we are? We are an adaptive evolutionary species capable of modifying ourselves so as to enhance our adaptation. This said, we must begin the serious consideration of what outcomes we seek from our science-and-technology investments. What kinds of social, cultural, and economic outcomes would we like to see as a result of our scientific investments? At present, I am of the view that our outcome logic is comprised of only three or four parameters, which have not been robustly considered or designed, whereas the much broader outcome logic we require would include perhaps dozens of parameters that are robust in their character and thoughtful in their design.

As we as a species move further down the self-directed evolutionary path, guided as we are by our national science policy, which is itself necessarily and incontrovertibly a product of human nature, we must think through the consequences of our nature and what it means to be empowered with scientific capabilities that allow us to direct further change and even to contemplate transformation of the very essence of who or what we are. In a sense, I think that we are approaching the moment in our own evolution when we have to make some assessment about whether we even want the self-directed evolutionary capabilities that we now have acquired. These allow us, after all, to produce certain outcomes. Or perhaps we may wish to operate in accordance with the basic mechanisms of evolutionary change as a force for natural selection and adaptation only. These are challenging questions but ones that, because of the speed of scientific advancement, the capabilities associated with technological innovation, and their impacts on who and what we are, merit the kinds of discussions that this book intends to initiate.

As your mind processes these words on this page, please note that I am writing this surrounded by an artificial atmosphere as my body rests in a metal object traveling at more than 500 miles an hour across more than 2,500 miles while I am connected via satellite to the Internet watching the news about a group of scientists reengineering the gut of a mosquito to produce an engineered insect that can kill off mosquitoes that carry the malaria virus. In this sense, I am not exactly sure what kind of human I am or how my life has been modified, but I am certain that there is increasingly less that is similar on a day-to-day basis between me and my ancestors of fifty thousand years ago.