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# Theologians Testing Transhumanism

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Charlie and Frances Townes crammed into the small elevator with me as we climbed to the second floor of my apartment building.

"Charlie's sister died yesterday," Frances informed me.

I turned to Charlie with an empathetic expression on my face. "Oh, Charlie, I'm sorry to hear of your sister's passing."

In a gruff voice Charlie responded, "Well, she was 97, after all. What did you expect?"

Shortly before preparing this issue of *Theology and Science* for press, Charlie died too. He was 99. I wanted him to live to be at least 100. But, to Charlie, this did not seem to matter. For Charlie, death comes as a matter of course. It's natural. Not unexpected or even unwelcome.

Charlie could accept something that today's transhumanists cannot accept—namely, his own aging and his own death. There is something wrong with death, say our transhumanist colleagues. Aging is a disease; and, like other diseases, we should cure it! The therapy will be derived from our intelligence, from our rational minds that are becoming increasingly capable of curing all diseases.

The transhumanist vision is nothing short of breathtaking, extravagant, exciting. It projects a picture of tomorrow that rivals Utopia, the new creation, the Kingdom of God (but without any god). Here's Ray Kurzweil: "Evolution moves toward greater complexity, greater elegance, greater knowledge, greater intelligence, greater beauty, greater creativity, and greater levels of subtle attributes such as love ... In every monotheistic tradition, God is likewise described as all of these qualities ... evolution moves inexorably toward this conception of God, although never quite reaching this ideal."[1] This is secular theology at work. It is the transhumanist vision.

We the editors of *Theology and Science* have invited some theologians to reflect on this transhumanist vision. Despite the disdain with which so many transhumanists treat religion, we will see that the overlap with the prophetic dimension of the biblical vision is significant. The theologians we invited to write are by no means Luddite. In fact, our theologians offer careful discernment accompanied by cautious partnership. Brian Patrick Green's article in this issue, "Transhumanism and Roman Catholicism: Imagined and Real Tensions," parses the straw man fallacies in much of transhumanist rhetoric regarding the alleged recalcitrance of the Roman Catholic religion. He refutes four myths associated with transhumanist

claims: allegedly the Church materially opposes life extension, it conceptually opposes even the idea of life extension, it opposes human genetic manipulation, and it opposes allowing people to die in hospitals. These four are false. They are straw men, so to speak. Green then proposes that there are four real tensions that are much more significant. Over against transhumanist contentions, Green argues that material immortality is highly improbable, that injustice and inequality are major ethical concerns, that transhuman omnipotence is impossible, and that utopianism is extremely dangerous. Just getting clear on what are and are not the issues is worth considerable effort.

In his article, "Going Beyond the Human: Christians and Other Transhumanists," Ronald Cole-Turner shows that transhumanism and Christianity divide on how we think about the cause of the changes that lie ahead for humanity. For transhumanists, the cause or the agent of human transcendence is technology. For Christians, it is grace, the underserved goodness of God who gives life and wholeness to the creation. Calvin Mercer zooms in to focus on the transhumanist concept of superintelligence in his article, "Whole Brain Emulation Requires Enhanced Theology, and a Handmaiden." Mercer is a bit less enthusiastic in embracing transhumanism than Cole-Turner, but he can still say there is no insurmountable theological objection to the idea of uploading one's brain into a computer to extend life in the form of cybernetic immortality. From the perspective of an engineer, Nelson Kellogg grants that cybernetic immortality might be possible; but he also celebrates our historic embodiment: mortal human embodiment is exquisitely suited for experiencing materiality and temporality and constructing meaning narratives from them. An immortal disembodied mind uploaded into a computer would miss out on the delights of tasting a fine California cabernet sauvignon. Is it worth the trade?

In what follows here in my article, I will offer the following thesis: transhumanist assumptions regarding progress are naive, because they fail to operate with an anthropology that is realistic regarding the human proclivity to turn good into evil. It is my own view that researchers in the relevant fields of genetics and nanotechnology should proceed toward developing new and enhancing technologies, to be sure; but they should maintain constant watchfulness for ways in which these technologies can become perverted and bent toward destructive purposes.[2] Despite my moral cautions, I find inspiring the audacity of transhumanism's promethean enthusiasm for transforming our world into a better place. A positive vision of the future, I have long argued, is the starting-point for a healthy and transformatory ethic. On this one point, I could imagine a new animal: the Christian transhumanist.

Nevertheless, like Green, Cole-Turner, and Mercer, I would like to correct one huge mistake made by transhumanist theorists. They presume that religion will attempt to place roadblocks in their way on the grounds that the religious mind is old-fashioned, out-of-date, Luddite, and dedicated to resisting change. When this image is applied to Christian theology or even to Jewish theology, it is mistaken. The Hebrew Scriptures include the prophets who look forward to the future, because God promises new things. "I am about to do a new thing," says God in Isaiah 43:19. The most significant of the new things God promises is the coming

Kingdom of God, the transformation of this creation into a new creation. The Bible closes in Revelation 21:5 with God saying, "See, I am making all things new." Rather than fixate on things in the past, biblical theologians are inspired to anticipate the new, to look forward to transformation, to celebrate innovation. If a theologian were to become critical of a transhumanist, it would not be in defense of what has been. Rather, it would be because of a naiveté in thinking that we could accomplish with technology a transformation that can be achieved only by the eschatological act of a gracious and loving God.

As one of the theologians in this issue of *Theology and Science* testing transhumanism, I will offer a brief exposition followed by some theological questions. These questions will help crack open the transhumanist worldview, showing more clearly where concert and conflict with theology and spirituality are present.

## Transhumanism: What is it?

The first use of the term, *transhumanism*, most likely is that offered by Julian Huxley. "The human species can, if it wishes, transcend itself," Huxley wrote in 1967. "We need a name for this new belief. Perhaps *transhumanism* will serve: man remaining man, but transcending himself, by realizing new possibilities of and for his human nature."[3] For Huxley, this term refers to a future evolutionary advance while enhancing, but not replacing, human nature as we presently know it. With the more recent appearance of the concept of the *post-human*, however, the term *transhuman* now suggests a future transcendence in which our present human nature will be replaced with a new and different post-human nature.

According to Nick Bostrom, founding director of the Future of Humanity Institute and of the Programme on the Impacts of Future Technology at Oxford University, the term *transhuman* "refers to an intermediary form between the human and the posthuman."[4] Today's transhumanist, then, is "anyone who advocates transhumanism,"[5] someone dedicated to "increasing the chance that we will have competent successors."[6]

The optimistic mood of the transhumanist movement looks forward to change, to big changes coming as the human race evolves beyond its present transitional stage. According to the *Transhumanist Declaration* of the World Transhumanist Association,

> Humanity will be radically changed by technology in the future. We foresee the feasibility of redesigning the human condition, including such parameters as the inevitability of aging, limitations on human and artificial intellects, unchosen psychology, suffering, and our confinement to the planet Earth.[7]

The present generation has the opportunity to cross the next threshold in the evolutionary history of the human race. In fact, humanity can even speed up its own evolution through technological self-transformation. Transhumanists rely upon a techno-science and a philosophy that seeks to employ genetic technology,

information technology, and nanotechnology to greatly enhance the healthy life span of persons, increase intelligence, and make us humans happier and more virtuous. The key is to re-contextualize humanity in terms of technology. This leads to a vision of a post-human future characterized by a merging of biological humanity with technology as the next stage of our human evolution. Humanity plus (H+) is calling us forward. *Post-human* refers to who we might become if transhuman efforts achieve their goals.

By and large, transhumanists see their movement as a replacement for traditional religion. The former religious glue that held our culture together in a common spirit is coming undone. What we need at this moment is an inspiring philosophy that reveres scientific reason and which will pull us toward a positive future. To meet this need, transhumanism offers a "totalized philosophical system" with a three-level worldview: a metaphysical level, a psychological level, and an ethical level.[8]

First, at the metaphysical or cosmological level, the transhumanist sees a world in a "process of evolutionary complexification toward evermore complex structures, forms, and operations." Second, at the psychological level, the transhumanist believes we human beings are "imbued with the innate Will to Evolve—an instinctive drive to expand abilities in pursuit of ever-increasing survivability and well-being." These two lead to the third level, the ethical, where "we should seek to *foster* our innate Will to Evolve, by continually striving to expand our abilities throughout life. By acting in harmony with the essential nature of the evolutionary process—complexification—we may discover a new sense of purpose, direction, and meaning to life, and come to feel ourselves *at home in the world* once more."[9] What Simon Young plans is to replace "Darwinian Evolution with Designer Evolution—from slavery to the selfish genes to conscious self-rule by the human mind."[10]

Transhumanism is a form of liberation movement. But, rather than liberate us from the fetters of capitalist exploitation or governmental oppression, technoscience will liberate us from our biological constraints. In the past we have been prisoners of our biology, but technology can liberate us. Our liberation will come from increased intelligence, a superintelligence that itself will find a way to remove itself from our deteriorating bodies and establish a much more secure substrate for endurance. Our mental lives in the future may take place within a computer or on the internet. What we have previously known as *Homo sapiens* will be replaced by *Homo cyberneticus*. *"As humanism freed us from the chains of superstition, let transhumanism free us from our biological chains."*[11]

After we have been freed from the limits of our inherited bodies, the expansion of human intelligence would be limited only by the size of our universe. What the transhumanist foresees is a cosmic imbuing of matter with consciousness. "Liberated from biological slavery, an immortalized species, *Homo cyberneticus*, will set out for the stars. Conscious life will gradually spread throughout the galaxy ... until finally, in the unimaginably distant future, the whole universe has come alive, awakened to its own nature—a cosmic mind become conscious of itself as a living entity—omniscient, omnipotent, omnipresent."[12] The entire universe will be converted into an "extended thinking entity," writes Hans Moravec.[13]

Promethean confidence pervades the transhumanist self-understanding. Here is the promise: we humans will arrest from the gods and from nature the principles

and resources we need to take our destiny into our own hands. With a wave of the philosophical hand we will expel the old fatalisms, the nay-sayers, the Luddites. "Bio-fatalism will increasingly be replaced by techno-can-do-ism—the belief in the power of the new technology to free us from the limitations of our bodies and minds. [ ... ] In the twenty-first century, the belief in the Fall of Man will be replaced by the belief in his inevitable transcendence—through Superbiology."[14] The torch of Prometheus will lead us into the new world of transhumanism. "Let us cast aside cowardice and seize the torch of Prometheus with both hands."[15]

This Promethean torch lights the way toward a utopian vision, a vision of future human fulfillment or even post-human fulfillment in a kingdom where rational intelligence has transcended its previous biological imprisonment. Not only as individuals, but also as a social community and even as a cosmic community, we will experience ecstatic human flourishing, the abundant life that previous religious visionaries could only dream of.

## Through the singularity and beyond

If you are accustomed to using the term *Singularity* to refer to that ball-bearing-sized beginning of the Big Bang when all things were only one thing, then get ready for a new use of the term. For the transhumanists, the Singularity lies in the future. Actually, the near future. The year 2045.

The Singularity transhumanists look forward to is the creation of smarter-than-human intelligence.[16] Leading up to the Singularity, we will see how the pace of technological change will be so rapid and its impact so deep that human life will be irreversibly transformed. The nose on this transformation face will be enhanced human intelligence, according to Ray Kurzweil of Singularity University located at NASA Ames in California.[17] What follows this nose is the observation that human intelligence will leap from human bodies to machines, making high-tech machines more human than we are. This can happen because intelligence is not dependent upon our biological substrate; rather, as information in patterns, intelligence can be extricated from our bodies. Our intelligence can live on in an enhanced form even when extricated from our bodies and placed in a computer. "Uploading a human brain means scanning all of its salient details and then reinstantiating those details into a suitably powerful computational substrate. This process would capture a person's entire personality, memory, skills, and history."[18]

Liberated from our bodies, our minds will become disembodied. Yet, we will enjoy new bodies, machine bodies, and perhaps virtual biological bodies these machines might create. "Future machines will be human even if they are not biological," writes Kurzweil. "This will be the next step in evolution."[19] Rather than a biological substrate, humans of a future generation will rely upon a machine substrate. When we have escaped our biological limitations, we will be able to program a much longer life, a disembodied yet intelligent life. "The Singularity will allow us to transcend these limitations of our biological bodies and brains. We will gain power over our fates. Our mortality will be in our own hands. We will be able to live as long as we want ... By the end of this century, the

nonbiological portion of our intelligence will be trillions of trillions of times more powerful than unaided human intelligence."[20]

Does living in cyberspace seem attractive? One would not be alone. One's cybermind would be in community with all other cyberminds, a variant on Teilhard's noosphere. One might even celebrate a new higher level of community. This is what Margaret Wertheim celebrates. Despite the dangers lurking in our computers, she thanks cyberspace for establishing a network of relationships. Further, the global community of electronic relationships is eliciting a sense of responsibility toward one another. "If cyberspace teaches us anything," writes Wertheim, "it is that the worlds we conceive ... are communal projects requiring ongoing communal responsibility."[21] Once Kurzweil has successfully uploaded our minds into cyberspace, we will enjoy a communal network of shared intelligence.

## Progressive evolution

At the level of presupposition, Kurzweil and his transhumanist colleagues assume that biological evolution and technological progress manifest the same underlying natural directionality. This underlying directionality in biology is accelerating now through human intelligence with its technocreativity. Kurzweil describes "an evolutionary process that inherently accelerates (as a result of its increasing levels of abstraction) and that its products grow exponentially in complexity and capability. I call this phenomenon the law of accelerating returns (LOAR), and it pertains to both biological and technological evolution."[22]

Evolution is progressive; so technology only speeds up what evolution would be doing on its own. Evolution has given us our intelligence, now it is time to advance still further in evolutionary development. Computers, along with GNR (genetics, nanotechnology and robotics), are all tools whereby we can build a dramatically new future for abundant living and cosmic community. Our post-human successors will be both natural and artificial at the same time.

The key characteristic of both evolutionary and technological progress is inevitability, according to Kurzweil. Both natural evolution and human technology benefit from a guiding purpose, a built-in purpose. And this built-in *logos* or entelechy virtually guarantees the future he is forecasting. What is this built-in purpose? Increased intelligence. "The purpose of the universe reflects the same purpose as our lives: to move toward greater intelligence and knowledge. [...] we will within this century be ready to infuse our solar system with our intelligence through self-replicating non-biological intelligence. It will then spread out to the rest of the universe."[23] What is clear here is that the highest value on the transhumanist scale of values is intelligence. A Christian might rate love and compassion higher than intelligence; but the transhumanist can invest himself or herself in intelligence because this is the direction that evolution is taking us. Note Kurzweil's confidence in the inevitability and necessity of what is to come. Simon Young makes this explicit: "The furtherance of human evolution through advanced biotechnology is not only possible, but *inevitable*."[24]

## Deathism, radical life extension, and cybernetic immortality

The enemy of the transhumanist is death. Not only death; but also those who accept death, who advocate deathism. Who advocates deathism? Religious believers. What!? Yes, religious believers try to manage their innate fear of death by concocting superstitious beliefs about life-beyond-death. Belief in life-beyond-death allegedly fools us into accepting death, even supporting death. Rather than believe in life-after-death fairytales told by priests who make money from presiding over funerals, transhumanists believe in techno-can-do-ism to conquer death.

Here is what we might consider the central tenet of transhumanism: "the belief in overcoming human limitations through reason, science, and technology."[25] Perhaps the most important limitation on the transhumanist list is aging, leading to death. Aubrey de Grey says he is "not in favor of aging." When one is not in favor of something, then it is time to apply technology to overcome it. This is what de Grey plans with his proposal for RLE ("radical life extension"). If we could eliminate aging, then "we will be in possession of indefinite youth. We will die only from the sort of causes that young people die of today—accidents, suicide, homicide, and so on—but not of the age-related diseases that account for the vast majority of deaths in the industrialized world today."[26] Improvements in rejuvenation technology will move quickly, forecasts de Grey, measured by LEV ("longevity escape velocity").[27] Soon "the average person ... can expect to live at least 1000 years" and the human race for billions of years.[28] Death will become our choice, not our destiny. Is this realistic?

Technofuturism relies on what I have long called the u-d-c formula: understanding–decision–control. The first task is to understand aging. The second task is to decide to do something about it. Then, thirdly, we would apply technology to fix the problems of aging and death. So, just why do we grow old and die? Does science have an answer? "Clear consensus now exists that ageing is caused by the gradual, lifelong accumulation of a wide variety of molecular and cellular damage. At the heart of the genetic determination of lifespan is the extent to which the organism's genome invests in survival." With the many tasks genetic expression needs to perform, why waste time and energy on repairing what is broken in order to lengthen the lifespan of the host organism? After all, the body is expendable, at least according to the disposable soma theory. Now, if the genome does not care about lifespan, might we with the help of our medical scientists care? Might we intervene to patch up molecular and cellular damage? Yes. "If ageing is a matter of things falling apart, can research realistically hope to achieve anything useful? The answer is emphatically yes—there is plenty of evidence that it is possible to intervene in the underlying causative mechanisms."[29]

Our diagnosis of aging and death is almost in. Ray Kurzweil offers an ebullient announcement: "We are beginning to understand aging, not as a single inexorable progression but as a group of related processes. Strategies are emerging for fully reversing each of these aging progressions, using different combinations of biotechnology techniques."[30] With emphasis, Kurzweil trumpets: "We have the means right now to live long enough to live forever."[31]

Now, to the task of the technofix. Kurzweil claims he has already achieved something notable in his own case. At age 56, his biological age is only 40. How has he accomplished this? "I have been very aggressive about reprogramming my biochemistry," he writes. "I take 250 supplements (pills) a day and receive a half-dozen intravenous therapies each week (basically nutritional supplements delivered directly into my bloodstream, thereby bypassing my GI tract). As a result, the metabolic reactions in my body are completely different than they would otherwise be."[32]

Vitamins enhance the health of the body, and the body's health enhances the brain's intelligence. But, this remains biological. Might we do more? Might we find a way for our intelligence to escape the limits of our aging bodies entirely? Yes, say the transhumanists. Our minds can move into a computer, and then into cyberspace.

> Currently, when our human hardware crashes, the software of our lives—our personal 'mind file'—dies with it. However, this will not continue to be the case when we have the means to store and restore the thousands of trillions of bytes of information represented in the pattern that we call our brains ... They [the bodiless intelligences] will live out on the Web, projecting bodies whenever they need or want them, including virtual bodies in diverse realms of virtual reality, holographically projected bodies, foglet-projected bodies, and physical bodies comprising nanobot swarms and other forms of nanotechnology.[33]

Does this sound familiar? Disembodied intelligence was the ideal of Plato and his Athenian teacher, Socrates. Socrates found comfort when anticipating the death of his body. Once liberated from his temporal body, Socrates' disembodied mind could go on to contemplate eternal ideas.[34] Once the transhumanist has liberated our intelligence from our biological bodies and placed our minds into computers or into cyberspace, we will be able to think cosmically and escape the threat of extinction through death.

In summary, transhumanists are proposing we follow two quite different paths to everlasting life: radical life extension and cybernetic immortality. How do we get from here to either of these destinations?[35] Technological progress will carry us from our biologically inherited bodies into a future of either life extension or cybernetic immortality. Transhumanists presume that progress is inherent to evolution and that our future liberation from biological constraints is inevitable. Like a rocket taking off from a launching pad, our computer generation has been thrust by evolution upward into the stratosphere of technological progress; and very soon we will find our immortalized minds winging throughout the cosmos.

## Theological question #1: Are there ethical tensions within transhumanism?

Let us now interrogate transhumanism: what are the ethical implications of all this? What kind of ethical deliberation or moral code might transhumanism lead to? Transhumanism leads down two separate paths. The first path is toward *laissez-faire* capitalism. After all, only the sectors of the modern economy flushed with money can afford to invest in GNR. Capital investment and technological

advance provide cyclical support for one another. Investors invest in GNR, and the sales earnings from GNR increase the amount of capital available for reinvestment. "It's the economic imperative of a competitive marketplace that is the primary force driving technology forward and fueling the law of accelerating returns. [ ... ] Economic imperative is the equivalent of survival in biological evolution."[36] What we find here is an ethical principle—the "will to evolve," mentioned earlier—drawn from evolutionary biology and applied to economics. Both biology and economics are driven by a single law: survival of the fittest. Social Darwinism is alive and well in today's transhumanism.

The second path taken by transhumanist ethical thinking is toward increased cooperation, even altruism or benevolence. Support for altruism takes the form of a common-sense admonition to cooperate with one other for the betterment of all. Benevolence is more highly valued than selfishness, according to this path followed by transhumanist ethicists. When this path is followed, the Darwinian struggle for existence with its competitive aggression is replaced. "If there is value in being human, it does not come from being normal or natural," says Bostrom, "but from having within us the raw material for being humane: compassion, a sense of humor, curiosity, the wish to be a better person."[37]

Simon Young leads us beyond evolutionary ethics by taking us beyond *genethics* to *nurethics*. By the former term he is referencing Richard Dawkins' theory that the "selfish gene" directs the course of evolution, and that human morality is a social expression of the selfish gene's pressure to replicate.[38] Dawkins' selfish gene theory is his interpretation of nineteenth-century Social Darwinism, where the "struggle for existence" in nature provided justification for a social ethic celebrating the survival of the fittest. Should we today construct an ethic based upon our selfish genes? Should today's society be governed by the competition between all those struggling to survive? Young answers in the negative. Now that we have brains and reason and science, we are no longer puppets dancing on the strings of our DNA. We are no longer merely struggling for biological survival. Our brains can transcend our biological inheritance. We transhumans can devise a rational ethic. This rational ethic Young describes as benevolence, a "common-sense" ethic that includes altruistic care for one another. "Morality is the replacement of Genethics with Nurethics—from control by the selfish genes, to self-rule by the human mind. [ ... ] In the language of Nurethics, the self-governing mind may learn to inhibit *stupidly selfish* instincts in its own best interests of ever increasing survivability and well-being."[39] The problem with selfish human behavior is that it is stupid. In contrast, benevolence is smart. As our intelligence increases, we will replace stupid selfish morality with more reasonable benevolent behavior, such as cooperation.

Do these two separate ethical paths lead to the same destination? By no means. They contradict one another. This contradiction between naturalistic ethics tied to evolution, on the one hand, and more benevolent values, on the other hand, was a contradiction already seen during the era of Social Darwinism. American pragmatist Charles Sanders Peirce pointed this out in the late nineteenth century. "The *Origin of Species* of Darwin merely extends politico-economical views of progress to the entire realm of animal and vegetable life ... As Darwin puts it on his title-

page, it is the struggle for existence; and he should have added for his motto: Every individual for himself, and the Devil take the hindmost! Jesus, in his Sermon on the Mount, expressed a different opinion."[40] If today's transhumanists affirm values akin to those of Jesus, they will have to do so in opposition to the values inherent in previous forms of evolutionary ethics.

Theologians have never been happy with Darwinian ethics. Christian theologians in particular have sought to raise human aspirations high above our animal appetites so that we can embrace benevolent love toward the unfit. On the contemporary front, Jürgen Moltmann has argued that, in our era of biomedical progress, human existence is no longer oriented toward mere survival. This means we are ready to reorient our lives around a new purpose, namely, fulfillment. Darwinian values that may have supported survival of the fittest in earlier stages of human evolution will need replacing by values that promote cooperation and social harmony. "The change in human interests evoked by biomedical progress can be described as a transition from the struggle for existence to striving for fulfillment," writes Moltmann. "The principle of self-preservation against others can be transformed into the principle of self-fulfillment in the other. Systems of aggression can be overcome by systems of co-operation."[41]

Should a transhumanist be willing to listen to a theologian such as Moltmann, the implication would be this: despite the conflation of biological evolution and technological progress, Darwinian values such as self-preservation in the competition for existence cannot be thought to be progressive in light of the picture of the future that transhumanists are painting. Therefore, transhumanist reliance upon the "will to evolve" in the form of *laissez-faire* capitalism reiterates the nineteenth-century reliance on Social Darwinism, the very value system that apparently needs replacing. In sum, transhumanists may be blind to a tension within their own thinking. Transhumanist ethics is torn by a tension between the capitalist values adhering to survival of the fittest and the altruistic values of a benevolent community.

## Theological question #2: What does the computer virus tell us about human nature?

Should technological progress be given a blank check? If it's progress, is it necessarily good? Even a transhumanist can say, "No." We must be selective, say the transhumanists. We might find we need to relinquish some opportunities while embracing others. Discerning which to relinquish and which to support is one of the ethical tasks consciously taken on by transhumanists.

An ethic of relinquishment is proffered by Kurzweil. He asks: should we relinquish the opportunity for some technological advances? If so, at what level? Kurzweil objects to naturalists who advocate "broad relinquishment"—that is, the broad rejection of technology in order to preserve what nature has bequeathed us. Yet, Kurzweil is drawn toward "refined relinquishment"—that is, relinquishing select technologies that threaten our safety or the safety of the environment. Saying "no" to developing physical entities that can self-replicate in a natural environment makes sense to

Kurzweil, even though the principle of self-replication will be necessary in certain cases such as self-replicating intelligence.[42] We want to avoid inundation by "gray goo," by unrestrained nanobot replication. What we need is "blue goo"—that is, "police" nanobots that will combat the criminal nanobots.[43] It appears that the battle between good and evil will continue, at least for a while.

At this point I wish to point out an everyday phenomenon we all have observed, namely, the computer virus. What does the mere existence of the computer virus tell us about human nature? In the case of the computer virus, we find an example of a non-biological self-replicating entity that has appeared on the scene along with the spread of internet communication. This software pathogen threatens to destroy our computer network medium; but, the bright inventors of computer software can design an "immune system" to prevent serious damage. What is Kurzweil's interpretation? "Although software pathogens remain a concern, the danger exists mostly at a nuisance level," he comments. Then he adds, "When we have software running in our brains and bodies and controlling the world's nanobot immune system, the stakes will be immeasurably greater."[44] In sum, Kurzweil is confident that the virus-fixers are smarter than the virus-makers.

Let's ask: is Kurzweil realistic? Does he fully realize that history records story after story of sheer human destructiveness? History tells us how marauders broke off the arms and penises of ancient Greek statuary and even the Egyptian sphinx, that today's graffiti delinquents the world over deface our most beautiful marble buildings, and soldiers urinate on the corpses of the slain. Why would we not expect that human beings in the future will rise up in stealth to subvert, sabotage, deface, and destroy the most exquisite and sophisticated advances a transhumanist can dream of? To be realistic is to recognize this possibility, this likelihood. For Kurzweil to assume that the virus-makers are less intelligent than the virus-fixers—so that the virus-fixers will win the race—is naive.

So I must ask: is the transhumanist understanding of human nature realistic enough? Does the transhumanist vision include a realistic anticipation of our human proclivity for twisting good things into the service of evil? What we see in transhumanism is a vague awareness of this ever-lurking threat; but is it being taken with sufficient seriousness? Does the confidence in progress as inherent and inevitable blind transhumanists from seeing the potholes in the road they are traveling?

This naiveté comes to vivid expression in the transhumanist confidence in the free market. Here is the path their ethical logic follows. Society should organize itself to foster the advances transhumanists are proposing. Technology needs money, private money; so society should be ready and willing to provide funding. This is where capitalism becomes incorporated into the transhumanist ethic. *Laissez-faire* capitalism will protect us from evil and keep progress progressing. "Inherently there will be no absolute protection against strong AI. Although the argument is subtle, I believe that maintaining an open free-market system for incremental scientific and technological progress, in which each step is subject to market acceptance, will provide the most constructive environment for technology to embody widespread human values."[45] The free market will provide enough good to overcome the evil nuisances. Really?

This leads me to ask: how will we get there from here? The highway of technological progress will take us there; and free market capitalism will clear the road of evil obstructions. So the transhumanists assume. In another essay, I parse the various ethical issues arising from within the advancing field of nanotechnology, one of the service roads that connect to the transhumanist highway.[46] Here, at a more abstract level, I simply wish to point out that the ethical values the transhumanists think they are trucking are likely to hit a detour, because investors from the free market will most likely divert the technology they fund into the service of their own economic ends.

## Theological question #3: Just how Luddite is religion?

These detour signs regarding human nature are apparently invisible to transhumanist drivers. The mirages transhumanists mistakenly think they see in front of them appear to be roadblocks put there by religion. Religion is allegedly Luddite. Through the eyes of today's transhumanists, religion looks like a roadblock, an obstruction. What the transhumanists think they see in religion is an atavistic commitment to the past, to the status quo, to resistance against anything new. This image is misleading; although we must admit that some religious reactions to scientific and technological advance can take Luddite form.

Nevertheless, I wish to acknowledge that Christian theology strongly affirms change, as do some other religious visions of transformation. The reluctance to embrace progress on the part of theologians does not come from a posture of resistance to change. Rather, it comes from an entirely different source—namely, a critique of the naiveté on the part of those who put their faith in progress, especially technological progress. What is so naive about transhumanism is its dismissal of the ambiguity that unavoidably accompanies all technological progress. What a Christian theologian can in good conscience do is encourage the advance of life-enhancing technology while keeping a wary eye open for the potential destructive proclivities of sinful human beings.

Let me provide an example of the misunderstanding of religion at work here. Simon Young says he would like to clear religious blockage to make way for transhumanism. He assumes that a religious faith in God is necessarily atavistic and recalcitrant. After all, if God created the world the way it is, then it follows that it is immoral to change it. After all, if God allowed a child to be born with a genetic defect, then it follows that it is immoral for medical therapists to repair it. This is Young's logic, applicable to the Christian faith if not to other religions. "The greatest threat to humanity's continuing evolution is theistic opposition to Superbiology in the name of a belief system based on blind faith in the absence of evidence."[47] But, does such a resistance to biological advance exist?

Despite his cocksure attitude, the historical evidence does not fit Young's assumptions. The God of the Bible does "new things," says Isaiah. God even promises a new creation, a renewing of nature. And if one only looks in the local telephone book or an online directory, more than likely a Good Samaritan hospital

can be found just around the corner. Medical care for those who suffer began with Jesus the healer and continues right down to present-day Christian consciousness. No Christian opposition to biology, either regular unleaded or the Super type, exists, especially when biology is pressed into medical service. So, Young's complaint regarding at least Christian recalcitrance is based upon blind assumptions rather than open-eyed observation.

Now, let's ask: what about the transhumanist attempt to attain life extension? Out of an apparent fear that religious tradition might attempt to slow down technological innovation, transhumanists accuse religious representatives of holding a vested interest in provenance over matters of death and immortality. One of the impediments to the advance toward cybernetic immortality is religion, they say. Religion stands in the way. Religion threatens to block progress. This is because religion has traditionally sought to provide a palliative for people faced with death. Religion brings acceptance of death, and comfort with that acceptance. Ready to engage in combat with traditional religion, in Promethean style Kurzweil wants to defy death and use nanotechnology as a weapon to defeat death. "The primary role of traditional religion is deathist rationalization—that is, rationalizing the tragedy of death as a good thing."[48] In order to benefit from what the Singularity can bring, we need to overcome our deathist rationalization. We need to sweep traditional religion out of our road.

Really? Do we need to sweep off the road the thousands of hospitals founded by religious orders for the purpose of extending human life and enhancing human health? Since when has Christianity, or others in the biblical tradition, preferred deathism over striving to improve health, longevity, and flourishing? Opening just one eye would disclose that religion is not the transhumanist's enemy here. The accusation that biblical religion is Luddite commits the straw man fallacy.

## Theological question #4: Can progress and eschatology complement one another?

Transhumanist thinking and future forecasting could arise only from within the three-century Western tradition of belief in progress. What belief in progress has done for Western civilization is hold in front of us a positive vision of the future. Transhumanism holds up a positive vision of the future, a variant of visions that have become quite familiar over the last half-century.

Modern Western culture shares the rise of modern science along with the biblical traditions of Judaism and Christianity. Like parents, biblical history and Greek rationality gave birth to modern science. As modern science has matured, our biblically based belief that the future will be different from the past has been augmented by the confidence that we can rely upon progress to bring this new future to pass. I would like to analyze this hybrid belief within a review of just what the concept of the future entails.

In the twenty-first century, we have inherited two distinctive yet complementary ways for viewing the future. The first way is to foresee the future as growth, as an

actualization of potentials residing in the present or past. The second way is to anticipate something new, to prophesy a coming new reality. The first can be identified with the Latin term *futurum*. This term suggests growth, development, maturation, or fruition. An oak tree is the actualized *futurum* of a potential that already exists in the acorn. The Latin term *adventus*, in contrast, is the appearance of something new; a first, so to speak. It is a future that can be expected or hoped for, but it cannot be planned for. Whereas *futurum* provides an image of the future that can result from present trends, *adventus* provides a vision of a future that only God can make happen.[49]

Even though the West has believed in progress for three centuries, the idea of progress became particularly poignant following World War II. The now nearly effete era of futurology in the 1960s and 1970s relied upon the concept of the future as *futurum*. We might date the birth of futurology with the founding of the World Future Society in 1967, although pioneering thought in the 1950s led up to it. Alvin Toffler spoke of the futurists as "a growing school of social critics, scientists, philosophers, planners, and others who concern themselves with the alternatives facing man as the human race collides with an onrushing future."[50] That school of futurists who flourished before many of today's transhumanists were born is all but dead now; but their legacy remains instructive for us today.

The "Earth Day" futurists of the late 1960s and 1970s set forth projections based upon then present trends. They forecasted alternative scenarios of damage to our planet and terrifying die-backs of starving people if trends continued toward increased population growth, increased natural resource depletion, increased agricultural and industrial production, increased pollution, along with increased threats to the ozone layer. They even warned us of global warming. These futurists structured their thinking according to what I earlier referred to as the understanding–decision–control (u-d-c) formula: we need to *understand* present trends along with the alternative scenarios they could lead to; we need to make a *decision* regarding which alternative future we should actualize; and then we the human race can take *control* over our destiny rather than be pilloried by the onrush of an otherwise uncontrollable future.[51] Futurology provided the science that was thought would provide human control over our planetary future. Today's transhumanists are heirs of this tradition.

Whereas the path to the future pictured by the futurists was a movement from here to there, the path envisioned by Christian theologians reversed the direction. The vision of God's future would require the advent of something new, the arrival of a reality that we ourselves could not control. Roman Catholic theologian, Karl Rahner, spoke of God's future as a "mystery," as a coming reality beyond our rational control. Human consciousness transcends present reality with an openness toward the future, to be sure, Rahner said; but we must rely on the fact that "this future wills to give itself through its own self-communication ... which is still in the process of historical realization."[52] Lutheran theologian Carl Braaten sharply defined the difference between futurology and eschatology: "A crucial difference between secular futurology and Christian eschatology is this: the future in secular futurology is *reached* by a process of the world's *becoming*. The future in

Christian eschatology *arrives* by the *coming* of God's kingdom. The one is a *becoming* and the other a *coming*."[53]

With these understandings in mind, it is clear that the concept with which transhumanists work is the future as *futurum*, the future as a futurologist would grasp it. New and startling things await us in the future, but the way from here to there is growth, technological progress. Adherence to progress lies at the level of assumption. One might ask: is such an assumption warranted? There is no doubt that progress in technology is a reality. Technological progress is the poster child of Enlightenment civilization. Yet, we have reason to ask whether progress is limited to technology or whether all of reality is being carried toward the future by the flow of progress. Specifically, is it reasonable to think of human nature as progressive?

Human transformation and the eradication of our propensity to obstruct and destruct can only be accomplished by a divine act of grace, by *adventus*. If we have strictly *futurum* with which to work, we will carry our crippled state of nature right into the post-human future. This prognostication is one that the theologian can offer to the mutual interaction. Without the theologian's prognostication, transhumanism will travel the road to the future blindly.

Another contributor to this blindness is confusion regarding the relationship between progress and value. The core of the doctrine of progress is that "*something* is better than it had been and promises to get better still in the future."[54] This Western idea burst forth during the Renaissance, and originally included a vision of a better future for culture. Eventually, cultural advance was eclipsed by industrial and then scientific or technological progress. Since the Enlightenment, "contemporary science and technology in effect co-opted the idea of progress, claiming improvement as self-evident."[55] We find ourselves today thinking objectively about the progressive advance of technology and, to some extent science; but we cannot be confident that we see progress culturally or morally.

> Because the notion of purpose or end in relation to nature was abandoned in modern science, there is no basis in science or in technology for judging the value of the ends to be served by technologies and therefore no basis for judging that changes to natural entities are improvements. This isolation of ends from means creates an ethical gulf between technical knowledge and its applications.[56]

The post-Enlightenment split between technological progress and moral values means, among other things, that technological progress threatens us with dehumanization. This split can be invisible, however, when the idea of progress seems to assume its own inherent definition of "better" and places this value in conflict with the values of the surrounding culture. When this happens, culture feels overrun by progress; and then technology is viewed as dehumanizing.

In the year when the twenty-first century opened, Chief Scientist of Sun Microsystems Bill Joy wrote a prophetic essay, "Why the Future Doesn't Need Us." Can we imagine a future in which we, members of the human race as we know it, will be no longer? Will downloading our intelligence into a machine threaten the continuance of or humanity? "But if we are downloaded into our technology," Joy asks, "what are the chances that we will thereafter be ourselves or even

human?"[57] The transformation of the natural world around us along with the transformation of ourselves into something new that surpasses us raises the question: will the kind of technological progress advocated by transhumanists actually dehumanize us?

Despite this threat of dehumanization, it is obvious that technological progress is driving our civilization. So, we ask: in what direction? Does technology determine the direction for us? Or, do we draw upon values from other sources and press technology into the service of actualizing those values? Does the dazzle of technological innovation temporarily blind us to the need for retrieving our fundamental value stance? Writing in the 1960s and 1970s, Georgetown University futurist Victor Ferkiss cautioned against allowing technology to follow its own course without being directed by human commitment to values such as justice, equality, and human well-being. "To control technology, to control the direction of human evolution, we must have some idea of where we are going and how far, else we will be mere passengers rather than drivers of the chariot of evolution."[58]

Passengers rather than drivers? Transhumanists presume they will be drivers. Is such a presumption solid? Maybe not. Note two things. First, note the false assumption that technological progress has a built in direction or purpose, false because it fails to recognize the split between progress and value. Second, note the close alliance between transhumanist progress and free market capitalism. The values allegedly inherent within evolution and progress will not be able to sustain themselves in the face of the pressure to serve the demands of the funders. Money talks. What money says goes. No way exists to liberate technological progress from the vested interests of the economic and political powers which make such progress possible. Despite their feeble whisperings of liberal values such as benevolence, cooperation, and ecology, the progress transhumanists anticipate will be unavoidably pressed into the service of consolidating and expanding the wealth of its investors.

What we can expect from theologians is a reminder that human nature is ambiguous, capable of the heights of compassionate devotion and capable of genocide and capable of creating a computer virus. In addition, it is important for theologians to remind us that our humanity is embedded in our world, our biological world. University of Chicago theologian David Tracy alerts us to the dangers of sacrificing our better judgment to naive trust in technological progress:

> Now *techne* becomes the product of the will to domination, power and control ... a power on its own, leveling all culture; annihilating all at-home-ness in the cosmos, uprooting all other questions in favor of those questions under its control; producing a planetary thought-world where instrumental reason, and it alone, will pass as thought. [ ... ] The object cannot think. The subject will not. We began as technical agents of our willful destiny. We seem to end as technicized spectators at our own execution.[59]

## Religious Luddites and aficionados

Yes, indeed, religious and spiritual sensibilities become easily shocked by transhumanism's bragging. What is shocking is transhumanism's reduction of all things

precious to brain function, its valuing of intelligence more highly than love or compassion, its dehumanization through technology, its underappreciation of human embeddedness in our bodies, and its rejection of biblical promises of a resurrected spiritual body. "Modern transhumanism is a statement of disappointment," says Brian Alexander; "Transhumans regard our bodies as sadly inadequate, limited by our physiognomy, which restricts our brain power, our strength and, worst of all, or life span. Transcendence will not be found in the murky afterlife of the usual religions, but in technological and biological improvement."[60] Richard Bauckham is quite satisfied with the biblical promise of resurrection; so he does not need radical life extension or cybernetic immortality. "We should be deploying the Christian belief in the resurrection of the body against these anti-human technological aspirations, just as the Fathers did against Platonic dualism."[61]

Notre Dame's leading bioethicist Celia Deane-Drummond similarly assesses the situation negatively. *Hyperhumanism* is the belief that humanity is in control of its own history and its own evolutionary future, she observes. Then, she concludes: "It would be a mark of intense hubris marked with political overtones of eugenics to expect that humans can control their own evolution."[62] In short, if transhumanists would like to be criticized by religiously or spiritually minded people, many theologians are ready and willing to provide criticism.

At the same time, religious aficionados of transhumanism are rising up. Jennifer Koosed writes eloquently:

> We are poised somewhere in between animals and divinities, aided, enhanced, and altered by technologies; changing and changed by our environments, both natural and cultural. Arguably, the Bible begins as a speciesist manifesto—only humanity is created in the image of the divine ... However, the Bible also contains multiple moments of disruption, boundary crossing, and category confusion: animals speak, God becomes man, spirits haunt the living, and monsters confound at the end. All of these stories explore the boundaries of the human in ways that destabilize the very category of the human. All of these stories engage thinking that broadly falls under the umbrella term *posthumanism*.[63]

In 2014 the newly formed Christian Transhumanist Association set its goal: "Our Goal: To actively pursue the development and utilization of human technology so as to participate in Jesus Christ's redeeming purposes in the world."[64] James Ledford has opened a blog post for Christian transhumanists.[65] According to the group, "Christianity is Transhumanism," the forecasted singularity represents a "crucial phase in divine self-actualization."[66] The affinity between transhumanism and spiritual ways of thinking has led to another rather enthusiastic new group, The Mormon Transhumanist Association.[67] The impact of transhumanist ideas is being felt in the Christian community.

## Conclusion

Along with the other authors in this issue of *Theology and Science*, I have sought to parse and discern and evaluate with nuance. I have not yet become a card carrying transhumanist. Although I applaud the energy and future orientation of

the transhumanists among us, many misgivings and fears and cautions remain for me.

In this article, my thesis has been this: transhumanist assumptions regarding progress are naive, because they fail to operate with an anthropology that is realistic regarding the human proclivity to turn good into evil. It is my own view that researchers in the relevant fields of genetics and nanotechnology should proceed toward developing new and enhancing technologies, to be sure; but they should maintain constant watchfulness for ways in which these technologies can become perverted and bent toward destructive purposes. Beyond this caution, I applaud the transhumanist vision for a better future and especially the multigenerational ethical vision of making way for our evolutionary successors.

## Endnotes

1 Ray Kurzweil, *The Singularity is Near: When Humans Transcend Biology* (New York: Viking, 2005) 389.
2 This article expands on some of my previous attempts at creative mutual interaction between transhumanism and Christian theology. See: "Perfect Humans or Trans-Humans?," for St. Deiniol's Library research project, *Future Perfect? God, Medicine, and Human Identity*, eds. Celia Deane-Drummond and Peter Manley Scott (London: T. & T. Clark, 2006), 15–32; "Transhumanism and the Promethean Future: Will Technological Progress Get Us There?," in *H+ Transhumanism and Its Critics*, eds. Gregory R. Hansell and William Grassie (Philadelphia: Metanexus, 2011), ch. 10, 147–175; "Progress and Provolution: Will Transhumanism Leave Sin Behind?" in *Transhumanism and Transcendence*, ed. Ronald Cole-Turner (Washington, DC: Georgetown University Press, 2011), 63–86; and "The Boundaries of Human Nature," *Dialog* 54:1 (Spring 2015): 5–8.
3 Julian Huxley, *Religion without Revelation* (London: C.A. Watts, 1967), 195.
4 Nick Bostrom, "Introduction—The Transhumanist FAQ: A General Introduction," in *Transhumanism and the Body: The World Religions Speak*, eds., Calvin Mercer and Derek F. Mather (New York: Palgrave, 2014), 4.
5 Ibid.
6 Nick Bostrom, *Superintelligence: Paths, Dangers, Strategies* (Oxford: Oxford University Press, 2014), 256.
7 http://www.transhumanism.org/index.php/WTA/declaration/ (accessed January 22, 2008). Transhumanism is an expansion on extropianism. Extropy, in contrast to entropy, refers to a system's capacity for growth based upon its functional order, intelligence, vitality, energy, and experience. Extropianism, or extropism, is a set of values oriented toward improving the human condition through technology that might some day bring immortality.
8 Simon Young, *Designer Evolution: A Transhumanist Manifesto* (Amherst, NY: Prometheus Books, 2006), 87.
9 Ibid., 19, italics in original; see: 202.
10 Ibid., 207.
11 Ibid., 32, italics in original.
12 Ibid., 44.
13 Hans Moravec, *Mind Children: The Future of Robot and Human Intelligence* (Cambridge, MA: Harvard University Press, 1988), 116.
14 Young, *Designer Evolution*, 20.
15 Ibid., 40.

16 Singularitarians are friends of the Singularity, believers who are working to make it happen. The Singularity Institute for Artificial Intelligence (SIAI), for example, was founded in 2000 to develop safe artificial intelligence (AI) and to raise awareness of both the dangers and potential benefits it believes AI presents. See http://www.singinst.org/.
17 Kurzweil, *Singularity*, 136.
18 Ibid., 198–199.
19 Ibid., 30.
20 Ibid., 9.
21 Margaret Wertheim, *The Pearly Gates of Cyberspace: A History of Space from Dante to the Internet* (New York: W.W. Norton, 1999), 304.
22 Ray Kurzweil, *How to Create a Mind: The Secret of Human Thought Revealed* (New York: Viking, 2012), 4.
23 Kurzweil, *Singularity*, 372.
24 Young, *Designer Evolution*, 22, italics in original.
25 Ibid., 15.
26 Aubrey de Grey, "Foreword: Forever Young," in Young, *Designer Evolution*, 9. In 2014, directors Jason Sussberg and David Alvarado produced a documentary movie, *The Immortalists*, covering Aubrey de Grey along with geneticist Bill Andrews. See Monya Baker, "Eternal Obsession," *Nature* 517:7535 (January 2015): 436–437.
27 Aubrey de Grey, "Radical Life Extension: Technological Aspects," in *Religion and the Implications of Radical Life Extension*, eds. Derek F. Maher and Calvin Mercer (New York: Macmillan Palgrave, 2009), 21. De Grey surmises that "aging escape velocity" might be "better" than LEV to describe what he means.
28 Ibid., 22.
29 Thomas B.L. Kirkwood, "A Systematic Look at an Old Problem," *Nature* 451:7179 (February 2008): 644–647; 645.
30 Kurzweil, *Singularity*, 212–213.
31 Ibid., 371.
32 Ibid., 211.
33 Ibid., 325.
34 Plato, *Crito and Phaedo*.
35 See Ted Peters, "Afterword: Theological Spiritual, and Ethical Reflections on Radical Life Extension," in *Religion and the Implications of Radical Life Extension*, 155–168.
36 Kurzweil, *Singularity*, 96.
37 Bostrom, "Introduction," 13.
38 See Richard Dawkins, *The Selfish Gene* (Oxford: Oxford University Press, 1976).
39 Young, *Designer Evolution*, 35; italics in original.
40 Charles Sanders Peirce, *Collected Papers of Charles Sanders Peirce*, 8 vols, ed. Charles Hartshorne and Paul Weiss (Cambridge, MA: Harvard University Press, 1931–1958), vol. 6, 293 or *The Essential Peirce: Selected Philosophical Writings*, 2 vols, ed. Nathan Houser, Christian Kloesel, and Peirce Edition Project (Bloomington: Indiana University Press, 1992–1998), vol. 1, 358–360.
41 Jürgen Moltmann, *The Future of Creation*, trans. Margaret Kohl (Minneapolis, MN: Fortress Press, 1979), 147.
42 Kurzweil, *Singularity*, 410–414.
43 Ibid., 416.
44 Ibid., 414.
45 Ibid., 420.
46 "Are we Playing God with Nano Enhancement?," in *Nanoethics: The Ethical and Social Implications of Nanotechnology*, ed. Fritrz Allhoff, Patrick Lin, James Moor, and John Weckert (New York: Wiley, 2007), ch. 4.3, 173–184.
47 Young, *Designer Evolution*, 324.
48 Ibid., 372.

49 "*Futurum* means what will be; *adventus* means what is coming." Jürgen Moltmann, *The Coming of God: Christian Eschatology* (Minneapolis, MN: Fortress Press, 1996), 25.
50 Alvin Toffler, ed., *The Futurists* (New York: Random House, 1972), 3.
51 I offered this analysis in two books, *Futures—Human and Divine* (Louisville, KY: Westminster John Knox Press, 1977) and *Fear, Faith, and the Future* (Minneapolis, MN: Augsburg Press, 1980). Here I challenged futurists with the eschatological problem: how do we get there from here? If the future is to be significantly different from the past, how on the basis of past resources can the change be accomplished? How can a leopard change its spots? Spots change only by a divine act of grace, by *adventus*. *Futurum* can give us evolution; but only *adventus* can give us genuine revolution.
52 Karl Rahner, *Foundations of Christian Faith* (New York: Searbury Crossroad Press, 1978), 458.
53 Carl E. Braaten, *The Future of God* (New York: Harper, 1969), 29.
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## Biographical Notes

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