Theological Brief

Metanexus

H-: Transhumanism and the Posthuman Future: Will Technological Progress Get Us There?

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The prospect of a posthuman future replete with ecological harmony, cybernetic immortality, and the imbuing of the entire universe with evolving intelligence tantalizes our imagination with a utopian vision. All we need do is turn a couple technological corners and, suddenly, the abundant life will be ours. We will be liberated from the vicissitudes of biological restraints such as suffering and death; and we will be freed by enhanced intelligence to enjoy the fulfilling life of a cosmic mind. The transhumanist or H+ vision is as inspiring as it is extravagant.

How do we get there from here? How do we make the leap from our biological inheritance to a future of machined mind? How do we accelerate evolutionary development to carry the present generation into an unprecedented new era of posthuman flourishing? How can our technological future gain a decisive victory over our biological past?

What we find in transhumanist prognostications is reliance on the doctrine of progress. Transhumanists assume that progress, understood as betterment over time, is inherent in nature and inherent in culture. Evolution constitutes progress in biology. Technological advance constitutes progress in culture. Betterment is inevitable as the inexorable wheels of progress keep turning. The direction of progress is set; and the task of transhumanist technology is to increase the speed forward.

In this paper I would like to begin with a brief exposition of the central claims and promises being lifted up by members of the transhumanist school of thought, explicating especially their assumptions regarding the nature of progress. I will place the futurist orientation of today's transhumanists in the broad context of futurist thinking which has developed over the last half century. I will distinguish between two types of futurist thinking: *futurum* relying upon growth or progress versus *adventus* which anticipates the advent of the new. I will show how transhumanism fits squarely into the first of these, not the second. Finally, I will turn to distinctively theological resources to critique the concept of progress with which the transhumanists work. I will explicate briefly the positions taken by neoorthodox theologians such as Reinhold Niebuhr and Langdon Gilkey, who helped make us aware that progress is ambiguous—that is, all technological advances can be pressed into the service of either good or evil. Progress in technology does not in itself foster progress in culture or morality.

My thesis is 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.

In the process I would like to correct one mistake made by transhumanst 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 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 things in the past, biblical theologians are inspired to anticipate the new, to look forward to transformation, to celebrate innovation. If a theologian would become critical of a transhumanist, it would not be in defense of what has been. Rather, it would be because of a naivetÈ 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.

What is a Transhumanist?

Astounding changes belong to our medium range future. A transformation of apocalyptic proportion is imminent. 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."1

The human race of the present generation has the opportunity to speed up its own evolution through technological self-transformation. "Transhumanism is the view that humans should (or should be permitted to) use technology to remake human nature," is the definition offered by Heidi Campbell and Mark Walker.2 It is a 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 recontextualize humanity in terms of technology. This leads to a vision of a posthuman future characterized by a merging of humanity with technology as the next stage of our human evolution. Humanity plus (H+) is calling us forward. *Posthuman* refers to who we might become if transhuman efforts achieve their goals.

The transhumanist movement seeks to fill the widening cultural void in Western civilization due to the disintegration of the former religious glue that held us together in a common spirit. In addition to the failure of tradition to hold us together, so also postmodernism is failing, because this nihilistic philosophy refuses to recognize the gifts of the modern scientific age, namely, reason and progress. 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"3 with a three level worldview: a metaphysical level, a psychological level, and an ethical level.

At the metaphysical or cosmological level, the transhumanist sees a world in a "process of evolutionary complexification toward evermore complex structures, forms, and operations." At the psychological level, transhumanists believe 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 ethical level, 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."4 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."5

The future will differ from the past. Whereas in the past we have been prisoners of our biology, in the future we will become liberated. Our liberation will come from increased intelligence, an intelligence 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.*"6

Once 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 cyberniticus*, 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."7 The entire universe will be converted into an "extended thinking entity," writes Hans Moravec.8

The mood of transhumanism is aggressively promethean. 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."9 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."10

This Promethean confidence in the advance of technology is accompanied by a utopian vision, a vision of future human fulfillment or even posthuman 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 which previous religious visionaries could only dream of.

The Singularity is Almost Here

How will we get there from here? Crossing the threshold of the Singularity—the creation of smarter-than-human inelligence—will mark the transition.11

Ray Kurzweil prophecies a dramatic future event—not in the distant future but rather just around the corner, 2045 to be exact. This will be a threshold event, an event known in his field as the "Singularity."12 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. 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."13

On the one hand, this would require disembodied intelligence. On the other hand, we would have new bodies, namely, machines. "Future machines will be human even if they are not biological," writes Kurzweil. "This will be the next step in evolution."14 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."15

Living in cyberspace could 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."16 Once Kurzweil has successfully uploaded our minds into cyberspace, we will enjoy a communal network of shared intelligence.

Even though we can thank our evolutionary past for bringing us to the point of intelligence, we the human race must move still further forward. Our generation has the opportunity to enhance our intelligence, 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.

What we note here is how Kurzweil conflates biological evolution and technological progress. He sees the latter as an extension of the former. The key characteristic of both evolutionary and technological progress is inevitability, according to Kurzweil. Both natural evoluton 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."17

How do we get there from here? Through applying our existing intelligence to leaping the hurdles that currently need technological transcending. "Insight from the brain reverse-engineering effort, overall research in developing AI [Artificial Intelligence] algorithms, and ongoing exponential gains in computing platforms make strong AI (AI at human levels and beyond) inevitable. Once AI achieves human levels, it will necessarily soar past it because it will combine the strengths of human intelligence with the speed, memory capacity, and knowledge sharing that nonbiological intelligence already exhibits."18 Note Kurzweil's confident vocabulary: "inevitable" and "necessary." Simon Young makes this explicit, "The furtherance of human evolution through advanced biotechnology is not only possible, but *inevitable*."19

Salvation from the Environmental Crisis

This technological utopia will bring not only maximized intelligence; it will also bring ecological harmony. Working for clean alternative technologies that not only preserve but also restore the

biosphere sits high on the agenda of what some transhumanists embrace as *technogaianism*, an ethic for technology that supports the Gaia philosophy.

Kurzweil believes that nanotechnology will rescue us from our environmental crisis. By building devices at the molecular scale out of nanoparticles, we can reduce the size and surface area of such devices, lowering their impact on the surrounding environment. In addition, new biological properties will be introduced, so that nanotechnology "will eventually provide us with a vastly expanded toolkit for improved catalysis, chemical and atomic bonding, sensing, and mechanical manipulation, not to mention intelligent control through enhanced microelectronics. Ultimately we will redesign all of our industrial processes to achieve their intended results with minimal consequences, such as unwanted by-products and their introduction into the environment."[20]

In short, manufacturing in the future will do less damage to our surroundings. In addition, we will develop better methods of cleaning up pollution. And we will even overcome hunger and poverty. "Emerging technologies will provide the means of providing and storing clean and renewable energy, removing toxins and pathogens from our bodies and the environment, and providing the knowledge and wealth to overcome hunger and poverty."[21] Nanotechnology in the service of progress can lead today's world into a tomorrow of social justice and ecological harmony.

The Coming Technological Victory over Aging and Death

Transhumanism can be described as a philosophy of life with a central tenet: "the belief in overcoming human limitations through reason, science, and technology."[22] One limitation on the transhumanist list to be overcome is aging. Death too. 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. 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."[23] Now, we might ask: might this be realistic?

Until recently demographers assumed that once gains made by reducing mortality in early and mid life had reached completion, then growth in longevity would level off and we would see a fixed maximum for human age. However, to our surprise, this is not happening. In much of the developed world, life expectancy continues to increase; and people reach old age in healthier condition than their grandparents did. Might realism be on the side of the transhumanists?

Why do we grow old? Can we do something about it? "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 life span 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."24

Ray Kurzweil offers an ebullient version of this otherwise cautious forecast: "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."25 With emphasis Kurzweil trumpets, "We have the means right now to live long enough to live forever."26

Can we slow down if not actually stop the aging process? Kurzweil answers affirmatively. He claims he has already achieved something notable in his own case. At age fifty-six his biological age is only forty. 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."27

Taking vitamin supplements enhances the health of the body; and this indirectly supports the operations of our intelligent brains. 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."28

Such a personal eschatology consisting of immortalized intellectual life is reminiscent of Socrates, who 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.29 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.

How do we get there from here? Technological progress will carry us from our biologically inherited bodies into a future of cybernetic immortality. Socrates presumed that his intellectual soul was inherently immortal. 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.

Transhumanist Ethics

What kind of ethical deliberation or moral code might transhuanism lead to? It leads in two opposite directions. One direction is toward *laissez faire* capitalism. After all, only the sectors of the modern economy flushed with money can afford to invest in GNR: genetics, nanotechnology, and robotics. 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."30 What we find here is an ethical principle—the "will to evolve," mentioned earlier—drawn from evolutionary biology and applied to economics, "survival of the fittest."

The other direction 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 transhumanist ethics. When this direction is taken, the Darwinian struggle for existence with its competitive aggression is replaced.

Simon Young, for example, asserts that we should advance from *genethics* to *nurethics.* By the former term he is referencing Richard Dawkin's theory that the "selfish gene" directs the course of evolution, and that human ethics are a social expression of the selfish gene's pressure to replicate.31 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, however, we are no longer puppets dancing on the strings of our DNA; we are no longer merely struggling for biological existence. Our brains can transcend our biological inheritance. We 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."32 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.

What Young perceives as a contradiction between the naturalistic ethics tied to evolution and his more benevolent values 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."33 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.

Theologian J˚rgen Moltmann has offered a similar analysis. If in our era of biomedical progress human existence is no longer oriented toward mere survival, then we are ready to reorient our lives around a new purpose, namely, fulfillment. Darwinian values that may have supported survival of the fittest 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 form 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."34 The implication for transhumanist ethics is this: despite the conflation of biological evolution and technological progress, Darwinian values such as self-preservation in the competition for existence can not be thought to be progressive in light of the picture of the future that transhumanists are painting. Yet, their 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, 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.

The Ethic of Relinquishment

With this in mind, we turn to another question: should a transhumanist ethic place us totally at the beck and call of every proposal for technological progress? Does this mean unbridled social subservience to any and every advance? 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.

Kurzweil addresses ethical issues with his concept of relinquishment. Should we relinquish the opportunity for technological advance? 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 which 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.35 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.36

We cannot avoid at this point introducing the phenomenon of the computer virus. In the case of the computer virus, we find an example of a nonbiological 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 nanbot immune system, the stakes will be immeasurably greater."37

Anticipating my theological analysis yet to come, I recommend that we pause for a moment to consider the significance of the computer virus for understanding the human condition. The invention of the computer virus is an invention with one sole purpose, namely, to destroy. Despite the benefits or even blessings of computer connections around the world, something at work in the human mind leads to the development of brute and unmitigated destruction. No increase in human intelligence or advance in technology will alter this ever lurking human proclivity.

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?

Transhumanists seek protection from evil in the free market. Here is the path their ethical logic follows. Society should organize itself to foster the advances they 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."38 The free market will provide enough good to overcome the evil nuisances.

Again we 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.39 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.

Does Religion Block Progress?

Such detour signs are apparently invisible. What transhumanists think they see in front of them are 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. Be that as it may, later in this paper I will show that Christian theology strongly affirms change. It even looks forward to radical

transformation. The reluctance to embrace progress on the part of theologians does not come from a posture of resistance. Rather, it comes from an entirely different source, namely, a critique of the naivetÈ on the part of those who put their faith in progress, especially technological progress. What is so naive about transhumanism, I will try to show, 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.

Simon Young provides an example of one who would like to clear religious blockage to make way for transhumanism. He assumes that a religious faith in God is necessarily atavastic 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, it follows that it is immoral for medical therapists to repair it. This is Young's logic, applicable to the Christian faith if not 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."40

However, 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 on-line 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.

What about the transhumanist attempt to attain everlasting life? 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."41 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.

Given what was mentioned just above, it would appear to me that any improvement in human health or even longevity would be greeted by Christian moralists as a blessing from science, a gift to be thankful for. No theological recalcitrance would block progress toward human betterment through medical technology. On the other hand, a Christian theologian is likely to contend that the extension of the present form of human life for the indefinite future offered in the transhumanist scenario simply does not correspond to the biblical vision of resurrection from the dead. Our redemption through resurrection into the new creation does not correspond to

cybernetic immortality. But, that is another matter, and not one I want to make central in this essay. Rather, I would like to understand more clearly the ramifications of transhumanist assumptions regarding progress in light of the Bible's promise of a coming future transformation.

Futurology and Eschatology

The appearance of transhumanist thinking and future forecasting has been made possible by recent advances in technology nested within a three century 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 which have become quite familiar over the last half century.

Here, let us expand the context for understanding the place of transhumanist thinking within the wider horizon of Western culture, and also within Christian theology. Two key elements in the transhumanist vision I would like to analyze are these: belief that the future will be different from the past plus the confidence that we can rely upon progress to bring this new future to pass. I would like to analyze these two commitments within a review of just what the concept of the future entails.

Two distinctive yet complementary ways for viewing the future stand before us. 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.42

The now nearly effete era of futurology relied upon *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."43 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 call the understanding-decision-control (udc) 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.44 Futurology provided the science that was thought would provide human control over our planetary future.

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."45 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."*46

In light of these understandings of the future, it is clear that the concept with which transhumanists work is the future as *futurum,* the future as a futurologist would grasp it.47 New and startling things await us in the future, but the way from here to there is growth, technological advance. Human and posthuman flourishing will be the result of step by step advances.This understanding of the posthuman future depends on a related concept, namely, progress.48 To the doctrine of progress we now turn.

Progress in Technology

As we have seen, transhumanism relies on the doctrine of 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?

The backbone of the doctrine of progress is that "*something* is better than it had been and promises to get better still in the future."49 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."50 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."51

What is key here is that our post-Enlightenment civilization has witnessed a split between technological progress and moral values. 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.

Despite the threat of dehumanization, it is clear 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."52

Over the last four decades futurists such as Ferkiss have wrestled with the role of technology in bearing our civilization toward its future. Not merely the machines we invent are relevant. Perhaps more relevant is the technological mindset, the cultural incorporation of the machine into our self-understanding as human beings. The nearly primordial concept of *techne* or *technique*—refers to the complex of standardized means for attaining a predetermined result. The technical mind converts otherwise spontaneous and unreflective behavior into behavior that is deliberate and rationalized. What distinguishes our modern world is the sheer delight we take in *technique*, finding fascination at more complex computers, faster jets, and bigger bombs. New nouns such as "technological man" or "technological civilization" have come to describe the ever expanding and apparently irreversible rule of technique in all domains of life. Technique has expanded not only our practical lives, but it has also entered into our inner lives. Technique has become constitutive of the identity of modern human being. "Technology is what has made man man," wrote Ferkiss.53

But, we might ask: could progress take us to the point where a fully "technological man" or perhaps a fully "technologized humanity" could emerge? To believe such a thing is either possible let alone desirable is to embrace a myth. "Technological man is more myth than reality," warned Ferkiss.54 Why? Because of the split between technique and value. Technique is still pressed into the service of values that transcend it, whether we observe this or not. And what critical observers have seen during the industrial age in the modern West is the subordination of both science and technology into the service of economic greed and political domination. Today's technology is still supported and guided by yesterday's bourgeois values. Nothing suggests this arrangement will change. "What if the new man combines the animal irrationality of primitive man with the calculated greed and power-lust of industrial man, while possessing the virtually Godlike powers granted him by technology? This would be the ultimate horror."55

Now, just how is this relevant to our analysis of the transhumanist project? 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 altruism, cooperation, and ecology, the progress transhumanists anticipate will be unavoidably pressed into the service of consolidating and expanding the wealth of its investors.

Does Technology De-Humanize Us?

Chief Scientist of Sun Microsystems Bill Joy opened the twenty-first century with 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?"56 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 de-humanize us? Would such a dehumanization be due to this specific technological proposal, or is it due to the very nature of technique itself?

Watching the incorporation of technique into human self-understanding has alarmed both theologians and secular humanists for half a century now. Some fear that technology applied to the inner life de-humanizes us, that it cuts us off from our otherwise spontaneous joy at being natural creatures. "Technique is opposed to nature," writes French social critic and Reformed theologian Jacques Ellul. "It destroys, eliminates, or subordinates the natural world, and does not allow this world to restore itself or even to enter into a symbiotic relation with it."57 Now, Ellul's pitting human nature in opposition to technique is a bit extreme; because most anthropologies would affirm that the pursuit of technological innovation is one of the obvious attributes of human nature. We are *homo faber,* the species that makes things. So, the threat of dehumanization comes not from technological advance per se; rather, the threat comes from our temptation to so identify with our technological production that we forget our relationship to the natural world. In order to protect us from such forgetfulness, Ferkiss proposes a new norm: "man is part of nature and therefore cannot be its conqueror and indeed he owes it some respect."58

Just how it is that technology threatens our humanity is subtle. On the one hand, transhumanists propose a technology that will enhance our humanity, at least the intelligent aspect of humanity. On the other hand, once technology takes over and replicates itself, it will leave our present stage of humanity in the evolutionary dust. An emerging posthumanity will replace us. We might ask: if we replace ourselves with posthumanity, will we have given expression to our essential human potential for self-transcendence through technology? Just how should we think about this?

If yesterday's futurists could speak to today's challenge, they would most likely warn us of tendencies within us to surrender what is human to the mindset of technique. "While it is untrue that technology determines the future independently of human volition, there is no question that that human individuals and human society are increasingly under pressure to conform to the

demands of technological efficiency, and there is a real possibility that the essence of humanity will be lost in the process, that human history will come to an end and be converted into a mere prelude to the history of a posthuman society in which machines rather than men rule."59 Ferkiss admonishes us to avoid this pitfall. "Man must maintain the distinction between himself and the machines of his creation....not only must man stand above the machine, he must be in control of his own evolution."60 Almost presciently anticipating today's proposal to create a posthuman intelligence, Ferkiss declares that we should preserve our humanness; we should maintain today's humanity over against the temptation to replace it with something more advanced. "Man's greatest need is not to transcend his species as such but to develop it fully....Man is not a superape; he is no longer an ape at all. Before we abandon man for a machine-man or a genetic mutant, we should learn what he can do in his present form once liberated from hunger, fear, and ignorance."61 Perhaps Ferkiss the humanist would represent the religious road block the transhumanists would like to clear out of the way.

Now, this observation that we human beings belong to nature and are embedded in nature is important, to be sure; yet this is not the point I would like to stress here. What is more important to the present analysis is the naive sense of control or false sense of dominance that technological victories over nature might elicit. 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 productof 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."62

The Theological Critique of Progress

The assignment given me by the conference leadership is to examine the concept of progress underlying the transhumanist vision, and to look at it from the distinctive perspective of a Lutheran theologian. For resources, I will turn to a theological subtradition which is not exclusively Lutheran but which relies upon Luther's Reformation insights into human nature. This is the neo-orthodox school of theological thinking which reigned during the middle of the twentieth century. One key figure was Reinhold Niebuhr, long time professor of social thought at Union Seminary in New York, along with one of his disciples, Langdon Gilkey, the late professor of theology at the University of Chicago. In the tradition of Augustine and Luther, they proffered a version of "Christian realism" regarding the sinful condition in which we human beings find ourselves; and they cautioned against overestimating what we can achieve within history apart from the gracious action of God.

In his writings during the 1930s and 1940s, Niebuhr shows awareness that our modern Post-Enlightenment culture which plays host to both natural science and European imperialism is a branch growing on a larger historical tree. The tree's trunk stands with roots in classical Greece and Rome, as well as in the soil of Israel's history and the Christian Bible. The modern idea of progress, he avers, is both an outgrowth and a pruned version of biblical eschatology. The prophets and the apocalypticists of Scripture saw human history as dynamic, as changing, as

moving from promise to fulfillment. But human advance is also subject to divine judgment. What this means is that all events within history are ambiguous—that is, the advance of each human potential can lead to either a good actualization or an evil actualization. Unambiguous goodness is not guaranteed by progress. Only eschatologically—only at the advent of God's Kingdom which will come by an act of divine grace—will unambiguous fulfillment be possible. In the meantime, we live in the paradox of being able to envision fulfillment while experiencing the inescapable dialectic of success and failure.

"The idea of progress is the underlying presupposition of what may be broadly defined as 'liberal' culture. If that assumption is challenged the whole structure of meaning in the liberal world is imperiled....The creed is nevertheless highly dubious....It is false in so far as all historical processes are ambiguous."63 The ambiguity of which Niebuhr speaks is the ever present potential created by human freedom, namely, the potential to choose evil and chaos as well as what is good and fulfilling. The problem is that today's believers in progress are blind to this ambiguity. They trust that inherent to the progress of history is a built-in *logos* or guiding principle that transforms otherwise meaningless growth into a process of betterment. This belief is a truncation of the biblical eschatology which preceded it. It is an outgrowth of the effect of Scripture on Western culture, to be sure; but the concept of progress prunes off this growth the previous recognition of the ineluctable continuation of creative evil. "The 'idea of progress,' the most characteristic and firmly held article in the *credo* of modern man, is the inevitable philosophy of history emerging from the Renaissance. This result was achieved by combining the classical confidence in man with the Biblical confidence in the meaningfulness of history. It must be observed, however, that history is given a simpler meaning than that envisaged in the prophetic-Biblical view...[Progress] did not recognize that history is filled with endless possibilities *of good and evil*...It did not recognize that every new human potency may be an instrument of chaos as well as of order; and that history, therefore, has no solution of its own problem."64

We moderns have inherited the optimism of the Renaissance while tacitly rejecting the realism regarding human nature given us by the Reformation. A sinner in need of divine grace was the starting point of Reformation anthropology, a starting point quickly forgotten during our eras of science building and nation building. "Original sin really means that human nature has completely fallen," writes Reformer Martin Luther. "The intellect has become darkened, so that we no longer know God and His will...our conscience is no longer quiet but, when it thinks of God's judgment, despairs and adopts illicit defenses and remedies. These sins have taken such deep root in our being that in this life they cannot be entirely eradicated."65 We are soiled by sin, so to speak. No amount of progress will wash it away. "Sin remains, then, perpetually in this life, until the hour of the last judgment comes and then at last we shall be made perfectly righteous."66 No amount of human intelligence, wit, will power, creativity, reform, or revolution can enable us to dig ourselves out of this hole. We are unable to transform ourselves. Only God can deliver us.

Now, says Niebuhr, without this acknowledgement of who we are as human beings, we will find ourselves with something less than a purchase on the reality of our situation. "This tragic aspect of history, towards which the Renaissance was partly oblivious, was precisely that aspect of history which the Reformation most fully comprehended. This comprehension is contained in the

Reformation polemic against all doctrines of sanctification, whether Catholic, secular or sectarian-Christian, in which it detects a too-simple confidence in historical possibilities. Its doctrine of 'justification by faith' contains implications for an adequate interpretation of history which have never been fully appropriated or exploited..."67 No historical ideology or scientific technology can possibly provide us with unambiguous sanctification—that is, unambiguous improvement let alone perfection. Failure to realize this leaves us in unreality.

Realism requires an accurate portrayal of the human situation. It requires an honest recognition of human sinfulness. At any time and in any place, otherwise happy and fulfilled human beings may initiate evil and destruction. This ever present risk of sinful activity is a universal contingent—that is, though unnecessary it is always and everywhere possible. "Sin is natural for man in the sense that it is universal but not in the sense that it is necessary."68 At the birth of the computer age, we should have been able to predict the coming of the computer virus, or something like it. Now, at the birth of transhumanist technology, similar predictions would be in order. A transhumanist spirituality would need to incorporate this kind of realism regarding human nature, a human nature not capable of changing through augmentation of intelligence.

When it comes to spiritual health, the realism of Luther's Reformation becomes Niebuhr's prescription. Niebuhr structures the insights of the Reformation paradoxically, so that they shine with a double dimensional illumination upon our experience. Here is Niebuhr's list of "the 'yes' and 'no' of its dialectical affirmations: that the Christian is *justus et peccator*, 'both sinner and righteous'; that history fulfills and negates the Kingdom of God; that grace is continuous with, and in contradiction to, nature; that Christ is what we ought to be and also what we cannot be; that the power of God is in us and that the power of God is against us in judgment and mercy; that all these affirmations which are but varied forms of the one central paradox of the relation of the Gospel to history must be applied to the experiences of life, from top to bottom. There is no area of life where 'grace' does not impinge."69 Because of who we human beings are, subject to sin, our fulfillment will require gracious divine action on our behalf. The good news of the Christian gospel is that God promises us such grace.

Progress Under Judgment

The core worry of the Christian theologian here is the naivetÈ with which believers in progress remove the ambiguities of human history, with which they maintain confidence in the good that progress can bring while denying the potential growth of evil. What the theologian ought to steadfastly maintain is that our vision of human abundance and human flowering must hold on to its transcendence; we must hold on to the judgment that the eschatological kingdom of God renders against the accomplishments of human history. "There is a great temptation today to confuse sociological evolution with spiritual progress," writes Jacques Ellul. "The Bible expressly tells us that the history of mankind ends in judgment."70

That Christian reliance upon a transcendent judgment against human history is a necessary antidote to the naivetÈ of faith in progress seems confirmed by events during the first half of the twentieth century. Technological and even cultural advance in the European West were insufficient to prevent political tyranny, mass genocide, and global war. Langdon Gilkey recites the litany of events that confirmed the need for seeing a dialectic between immanent progress

and God's transcendent kingdom. "In the First World War—despite the refinement of European culture and the moral idealism of that culture's self-understanding—Europe experienced the apparent self-destruction of this most modern and developed of societies in a prolonged and senseless bath of blood. In the Depression and its aftermath, the West as a whole experienced the self-contradiction of its economic forms, and the consequent rise of fascist and communist totalitarianisms that dissolved the hard-won political freedoms of modernity. And in the Second World War, with its slavery, genocide and technology of ultimate destruction, the world experienced an eruption of technological and sophisticated evil: personal, political and social, unknown to history before. History seemed to manifest demonic regress not progress in the social, political and moral realms."71

Gilkey's theological judgment reiterates that of Reinhold Niebuhr and was shared by the influential school of neo-orthodox theologians subsequent to World War II. "It seemed the obvious lesson of current events that morals do not advance in history. Hence, a progress of technology may in fact augur a regress in social harmony and social justice, and thus all that is cumulative, instead of 'saving' mankind, can threaten to become the demonic instrument of mankind's destruction. This permanent ambiguity of historical process, this continuation of sin even in an advancing culture, meant that if there be a kingdom, it could not be realized through a sociohistorical development leading to a perfect society in history."72

When considering our evolutionary history and technological future, what direction should a realistic anthropology follow? Paul Jersild, in a recent article on science and faith, points a cautious way. "In some respects, a more civilized society does emerge with the evolution of cultures, but there is ample evidence that evolving societies invent still more horrific ways to exalt themselves and destroy their neighbors. Evolution, whether biological or cultural, does not mean inexorable progress on the road toward perfection."73 In sum, we should move forward, but we should not presume progress in every respect is inevitable or guaranteed.

Conclusion

It is my conclusion that members of the transhumanist school of thought are naive about human nature; and they are overestimating what they can accomplish through technological innovation. They are naive because they take insufficient account of the propensity we human beings have for using neutral things or even good things for selfish purposes, resulting in chaos and suffering. The assumption transhumanists seem to make that both biological evolution and technological progress have their own built in entelechy or purpose from which we can derive our social ethic overlooks the threat to their values posed by the funders. By depending on private capital and even building *laissez faire* capitalism into their value system, they risk subjugating all their technological achievements to the values of the bourgeois class. The result will be technological advances that benefit the investors to the detriment of the wider society and the ecosphere they would like to rehabilitate.

The forecast of a future replete with cybernetic immortality and cosmic consciousness seems extravagant and fantastic. Whether it is possible for our intelligence and self-consciousness to be reduced to information patterns and then uploaded on to a non-biological substrate is not a question I can address here. But I would like to point out that there is no warrant for believing

that all our human problems will be solved by transhumanist technology. There is no warrant for thinking that the currently selfish human race will be able to transform itself into an altruistic or benevolent one. There is no warrant for thinking that we human beings with our history of economic injustice and ecologically unhealthy habits are willing or able, on our own, to eliminate poverty and protect the ecosphere. No amount of increased intelligence will redeem us from what the theologians call *sin.*

I call this the *eschatological problem.* I ask: how do we get there from here? If we in the human race have been responsible for selfishness, economic injustice, and environmental degradation, how can we then become capable of benevolence, economic justice, and ecological health? How can a leopard change its spots? What transhumanists are hoping for is *adventus*, but they have only *futurum* to work with.

God has promised some of what appears in the transhumanist vision. But the transformation of the human heart so that it exudes benevolence and justice requires divine grace. The advent of the new creation will require much more than what our evolutionary history by itself can deliver. It will require God's transforming power. Increased human intelligence cannot on its own accomplish what it will take divine grace to make happen.

One more observation. I would like to point out that this near apocalyptic vision projected by the transhumanists includes some elements which appear irreconcilable with the biblical promise of a new creation. The biblical promise begins with Jesus' Easter resurrection as a model. This includes suffering and death, complete death. It also includes a divine act of raising the dead to new life. What happened to Jesus is what will happen to us. NRS 1 Corinthians 15:20: " But in fact Christ has been raised from the dead, the first fruits of those who have died." The New Testament does not look forward to living forever in our present state; rather, it presumes we will pass through death to the new life God promises. Eternal life is not the same thing as extended life.

The picture of cybernetic immortality painted by the transhumanists does not look like the Bible's promise of resurrection. Even if genetic enhancement and nanotechnology are able to increase human longevity or even lead to cybernetic immortality, the uploaded self-consciousness will still need to pass through the purgatorial cleansing of death and resurrection. Apart from the fulfillment of this promise, the future of human history will remain like its past, ambiguous.

Finally, a Christian theologian can only encourage continued scientific research into genetics and nanotechnology when the goals are improved human health and well-being. Attempts to enhance human intelligence through technological augmentation might also be greeted with approval, although probably not with overwhelming enthusiasm. Because the theologian looks forward to the advent of divine transformation, he or she can celebrate anticipatory transformations brought by advances in science and technology. Biblical theology need not be recalcitrant or Luddite. Biblical theology can be ready to celebrate technological breakthroughs while remaining realistic about what to expect from human nature.

Endnotes

1 http://www.transhumanism.org/index.php/WTA/declaration/ (accessed January 22, 2008). Transhumanism is an expansion on *extropianism*. Extropry, 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.

2 Heidi Campbell and Mark Walker, "Religion and Transhumanism: Introducing a Conversation," *Journal of Evoluion and Technology*, 14:2 (August 2005) 1. See: Nick Bostrom, home page 2005, http://www.nickbostrom.com/tra/values.html.

3 Simon Young, *Designer Evolution: A Transhumanist Manifesto* (Amherst NY: Prometheus Books, 2006) 87.

4 Ibid., 19 italics in original; see: 202.

5 Ibid., 207.

6 Ibid., 32, italics in original..

7 Ibid., 44.

8 Hans Moravec, *Mind Children: The Future of Robot and Human Intelligence* (Cambridge MA: Harvard University Press, 1988) 116.

9 Young, *Designer Evolution*, 20.

10 Ibid., 40.

11 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. http://www.singinst.org/.

12 Ray Kurzweil, *The Singularity is Near: When Humans Transcend Biology* (New York: Penguin, 2005) 136.

13 Ibid., 198-199.

14 Ibid., 30.

15 Ibid., 9.

16 Margaret Wertheim, *The Pearly Gates of Cyberspace: A History of Space from Dante to the Internet* (New York: W.W. Norton, 1999) 304.

17 Kurzweil, *Singularity*, 372.

18 Ibid., 407.

19 Young, *Designer Evolution,* 22, italics in original.

20 Ibid., 2005) 251.

21 Ibid., 371-372.

22 Ibid., 15.

23 Aubrey de Grey, "Foreword: Forever Young," Ibid., 9.

24 Thomas B. L. Kirkwood, "A systematic look at an old problem," *Nature* 451: 7179: 644-647 (7 February 2008) 645.

25 Kurzweil, *Singularity,* 212-213.

26 Ibid., 371.

27 Ibid., 211.

28 Kurzweil, *Singularity,* 325.

29 Plato, *Crito* and *Phaedo.*

30 Kurzweil, *Singularity*, 96.

31 See: Richard Dawkins, *The Selfish Gene* (Oxford and New York: Oxford University Press, 1976).

32 Young, *Designer Evolution,* 35, italics in original.

33 Charles Sanders Peirce, *Collected Papers of Charles Sanders Peirce*, edited by Charles Hartshorne and Paul Weiss (8 Volumes: Cambridge: Harvard University Press, 1931-58) 6:293 or *The Essential Peirce: Selected Philosophical Writings,* edite by Nathan Houser, Christian Kloesel, and Peirce Edtion Project (2 Volumes: Bloomington: Indiana University Press, 1992)1998) 1:358-360.

34 J˚rgen Moltmann, *The Future of Creation,* translated by Margaret Kohl (Minneapolis: Fortress Press, 1979) 147.

35 Kurzweil, *Singularity*, 410-414.

36 Ibid., 416.

37 Ibid., 414.

38 Ibid., 420.

39 "Are we Playing God with Nano Enhancement?" *Nanoethics: The Ethical and Social Implications of Nanotechnology,* ed. by Fritrz Allhoff, Patrick Lin, James Moor, and John Weckert. New York: Wiley, 2007, chapter 4.3.

40 Young, *Designer Evolution,* 324.

41 Ibid., 372.

42 "*Futurum* means what will be; *adventus* means what is coming." J˚rgen Moltmann, *The Coming of God: Christian Eschatology* (Minneapolis: Fortress Press, 1996) 25.

43 Alvin Toffler, editor, *The Futurists* (New York: Random House, 1972) 3.

44 I offered this analysis in two books, *Futures—Human and Divine* (Louisville: Westminster John Knox Press, 1977) and *Fear, Faith, and the Future* (Minneapolis: 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?

45 Karl Rahner, *Foundations of Christian Faith* (New York: Searbury Crossroad Press, 1978) 458.

46 Carl E. Braaten, *The Future of God* (New York: Harper, 1969) 29.

47 It is my judgment that Robert M. Geraci is mistaken when he insists that the AI movement is apocalyptic (*adventus*) in "Apocalyptic AI: Religion and the Promise of Artificial Intelligence," *Journal of the American Academy of Religion,* 76:1 (March 2008) 138-166. Geraci rightly recognizes that the transhumanists replace divine action with evolutionary progress (p.159); but then he fails to acknowledge that this implies a non-apocalyptic form of transformation. In addition, Geraci offers a reductionistic interpretation of Jewish and Christian apocalyptic, presuming it is caused by a "breakdown of a proper social order" and a sense of alienation (pp.140-141; 146-147). He even describes Hans Moravec and Ray Kurzweil as alienated. It is difficult to see how millionaire industrial leaders or authors who publish with Harvard University Press belong to the class of alienated victims of social breakdown.

48 The doctrine of progress and the science of futurology may look different from eschatology, but they are all children of the same religious family. "Alone among the major world religions, and in special contrast to those of the East, Christianity postulated that the world was going somewhere, that the future was not simply an unchanging or cyclically repeating replica of the past. The idea of progress—central to the development of science and the modern world—had its roots in Christian eschatology." Victor C. Ferkiss, *Technological Man: The Myth and the Reality* (New York: New American Library, Mentor Books, 1969) 43.

49 Steven Goldman, "Progress," in *Encyclopedia of Science, Technology, and Ethics,* edited by Carl Mitcham (4 Volumes: New York: Macmillan, Gale, 2005) 3:1519.

50 Ibid., 1520.

51 Ibid.

52 Ferkiss, 203.

53 Ibid., 36.

54 Ibid.,202.

55 Ibid.,34.

56 Bill Joy, "Why the Future Doesn't Need Us," *Wired* (April 2000). http://www.wired.com/wired/archive/8.04/joy.html.

57 Jacques Ellul, *The Technological Society,* translated by Robert K. Merton (New York: Vintage Books, 1964) 179.

58 Ferkiss, *Technological Man,* 209.

59 Victor Ferkiss, *The Future of Technological Civilization* (New York: George Braziller, 1974) 5.

60 Ferkiss, *Technological Man,* 210.

61 Ferkiss, *Technological Man,* 216.

62 David Tracy, *Th Analogical Imagination: Christian Theology and the Culture of Pluralism* (New York: Crossroad, 1981) 352.

63 Reinhold Niebuhr, *The Nature and Destiny of Man,* 2 Volumes (New York: Charles Scribner's Sons, 1941-1942) 2:240.

64 Ibid., 2:154-155, italics in original.

65 Martin Luther, *Luther's Works*, American Edition, Vols. 1-30, edited by Jaroslav Pelikan (St. Louis: Concordia Publishing Company, 1955-1967); Vols. 31-55, edited by Helmut T. Lehmann (Minneapolis: Fortress Press, 1955-1986) 1:114.

66 Ibid., 34:167.

67 Niebuhr, *Nature and Destiny*, 2:155.

68 Ibid., 1:242. Robert John Russell introduces the term, "universal contingent," in reference to Niebuhr's position. Like human history, nature is also ambiguous—that is, a mixture of beauty and suffering. "The Groaning of Creation: Does God Suffer with All Life?" in *The Evolution of Evil,* edited by Gaymon Bennett, Martinez Hewlett, Ted Peters, and Robert John Russell (Gˆttingen: Vandenhoeck & Ruprecht, 2008) 120-142.

69 Niebuhr, *Nature and Destiny.*, 2:204. Quite like Niebuhr, Moltmann comments: "Everything that can be used can also be misused. Consequently biomedical progress is ambivalent as long as man is an unreliable being." *Future of Creation,* 135.

70 Jacques Elul, *False Presence of the Kingdom,* translated by C. Edward Hopkin (New York: The Seabury Press, 1972) 20.

71 Langdon Gilkey, *Reaping the whirlwind: A Christian Interpretatio of History* (New York: Seabury Press, 1976) 223.

72 Ibid., 222-223.

73 Paul Jersild, "Rethinking teh Human Being in Light of Evolutionary Biology," *Dialog* 47:1 (Spring 2008) 42.