

Transhumanism

with Hava Tirosh-Samuels, “Transhumanism as a Secularist Faith”; Robert M. Geraci, “Video Games and the Transhuman Inclination”; James J. Hughes, “The Politics of Transhumanism and the Techno-millennial Imagination, 1626–2030”; and Ronald Cole-Turner, “The Singularity and the Rapture: Transhumanist and Popular Christian Views of the Future”

THE POLITICS OF TRANSHUMANISM AND THE TECHNO-MILLENNIAL IMAGINATION, 1626–2030

by James J. Hughes

Abstract. Transhumanism is a modern expression of ancient and transcultural aspirations to radically transform human existence, socially and bodily. Before the Enlightenment these aspirations were only expressed in religious millennialism, magical medicine, and spiritual practices. The Enlightenment channeled these desires into projects to use science and technology to improve health, longevity, and human abilities, and to use reason to revolutionize society. Since the Enlightenment, techno-utopian movements have dynamically interacted with supernaturalist millennialism, sometimes syncretically, and often in violent opposition. Today the transhumanist movement, a modern form of Enlightenment techno-utopianism, has evolved a number of subjects, from the libertarian utopians funded by billionaire Peter Thiel, to religious syncretists like the Mormon Transhumanist Association, to the left-wing technoproggressives and their bioliberal intellectual allies. In reaction to accelerating technological innovation and transhumanist ideas, apocalyptic Christians, and even secular catastrophists, have begun to incorporate human enhancement into their End Times scenarios. With all sides believing that the fate of humanity hangs in the balance, there is a growing likelihood of violent confrontation.

Keywords: apocalypticism; body; cyberculture; End Times; Enlightenment; eugenics; extropians; libertarianism; millennialism; Singularity; technoprogressive; transhumanism

As soon as hominids developed the capacity for abstract thought, they began to imagine ways that their life could be radically improved. They

James J. Hughes is Executive Director of the Institute for Ethics and Emerging Technologies (ieet.org), and Director of the Office of Institutional Research and Planning, Chair of Institutional Review Board, and Lecturer of Public Policy Studies at Trinity College 300 Summit St., Hartford, CT 06106, USA; e-mail: James.Hughes@trincoll.edu.

developed medicines and magical practices to improve health and grant wisdom. They developed religious worldviews that posited times and places without toil, conflict, or injustice, a more perfect world where they would be free of their vicissitudes. Eventually those doctrines began to posit that a radically improved social and corporeal life was possible in the immediate future, not just in the distant past or after death, giving birth to the myriad forms of millennialism that have roiled though the history of the last 2,000 years (Barkun 1974; Cohn 1970).

With the emergence of the European Enlightenment in the 1700s, however, these aspirations found expression in the belief that a new world could and would be built on foundations of reason, science, and technology. All people would be united in an egalitarian commonwealth, freed by machines from poverty and the necessity of toil, from disease and even death by scientific medicine, and ennobled by heights of civilizational achievement. Some believed these things would be accomplished through peaceful evolution, and others through bloody revolution. Some believed that a rationalizing state would achieve these ends, while others believed unfettered market exchange would be the engine. Some believed in new hybrids of reason and faith, while others believed reason to be incompatible with religion. It was in this stew of often contradictory ideas about the nature of progress that modern techno-millennialism was forged.

With the emergence of cyberculture, the technoutopian meme-plex has found its natural medium and has been furiously mutating and crossbreeding with contemporary political ideologies, philosophies, and religions. Self-identified transhumanists are just one of the strands of contemporary techno-utopianism, but even within this small global community, many ideological hybrids are stirring. Much transhumanist politics has been shaped by the libertarian leanings of its affluent, educated, male, and American base. But in the last decade transhumanists have become far more culturally and politically diverse, and its left wing has aligned with an international set of bioliberal intellectuals, setting the stage for robust biopolitical conflicts. Meanwhile both religious transhumanists and groups on the apocalyptic religious fringe have added accelerating technological change and the advent of posthumans and machine minds to their eschatological visions. With all sides, secular and religious, Left and Right, believing that the future of humanity hangs in the balance, the prospects for violent confrontation are rising.

In this paper I will briefly discuss the flavors of transhumanism that have developed in the last two decades, including extropian libertarianism, the liberal democratic World Transhumanist Association/Humanity+, Singularitarian millennialism, religious transhumanism, and radical democratic transhumanism or technoprogressivism. I will describe some of the ways that transhumanism is being perceived by the growing apocalyptic

Christian subculture in the United States. Finally I will reflect on ways that millennialist violence might be inspired by these various subcultures.

PROTO-TRANSHUMANIST MILLENNIALISM AND THE BODY

The intertwined aspirations to transcend human limitations and enter a radically new social order are found in the earliest recorded human cultures. The Epic of Gilgamesh, for instance, ends with the story of a bad king setting off on a hero's journey in searching of immortality. Failing, he returns to Uruk a wiser man, who realizes that building a city is an even greater work. In the Jewish (Isaiah 25:8, 26:19) and Christian traditions, the messiah will establish a new kingdom on earth without war and want, and resurrect the righteous dead who will all be given new glorified bodies. "We will all be changed—in a flash, in the twinkling of an eye, at the last trumpet. For the trumpet will sound, the dead will be raised imperishable, and we will be changed" (1 Cor. 15:50–55). In Buddhist millennial mythos presented in *The Lion Roar of the Wheel-Turning Monarch* (Hughes 1993), the coming Buddha will establish a righteous millennial kingdom without war and want, and the people will live to 80,000 years old. In every instance of millennial prophesy we can find promises of both a better society and longer, healthier lives ennobled by wisdom.

Enlightenment thinkers took these millennial aspirations and proposed achieving a radically transfigured body and society through science and technology. The thesis that Enlightenment ideas of Progress and utopia are actually secularizations of Christian eschatology is not novel (Becker 1932; Bozeman 1997; Nisbet 1979), and the interweaving of transcendent expectations with the scientific imagination probably actually began with Renaissance alchemists like Paracelsus and Nicholas Flamel, and Christian humanists like Pico della Mirandola (Santamaria 2011), who has God address mankind in his 1486 *Oration on the Dignity of Man*:

All other things have a limited and fixed nature prescribed and bounded by our laws. You, with no limit or no bound, may choose for yourself the limits and bounds of your nature. We have placed you at the world's center so that you may survey everything else in the world. We have made you neither of heavenly nor of earthly stuff, neither mortal nor immortal, so that with free choice and dignity, you may fashion yourself into whatever form you choose. To you is granted the power of degrading yourself into the lower forms of life, the beasts, and to you is granted the power, contained in your intellect and judgment, to be reborn into the higher forms, the divine. (Mirandola 1486)

Many scholars, however, credit Francis Bacon's work as the beginning of Enlightenment science. In his novel the *New Atlantis*, Bacon (Bacon 1626) imagines a proto-transhumanist utopia without slavery or poverty, governed by a religiously tolerant scientific elite and focusing on research with the goal of "effecting all things possible." The scientists of Bacon's New

Atlantis were working toward the conquering of disease, “the prolongation of life, the restitution of youth to some degree, the retardation of age,” to increase strength and control pain, and the “making of new species, transplanting of one species into another.”

Likewise for the Enlightenment thinkers who followed in the coming centuries, human beings were not confined to their bodies, brains, or social orders by divine will and had the power to create something better through reason and technology. The Marquis de Condorcet (1795), Benjamin Franklin, and William Godwin all proposed that eventually human beings would be able to conquer not only oppression and inequality through reason, but also death and disease, and Denis Diderot suggested that humanity might evolve into a great variety of posthuman species. In *D’Alembert’s Dream*, Diderot (1769) proposed that brains might be taken apart and reconstituted later, that intelligent animals and animal-human hybrids might be possible, and that sophisticated machines might have minds.

Enlightenment thought contained many contradictions and varied interpretations that have given rise to many diverse and conflicting social movements, from anarchism, liberalism, and social democracy, to Marxist-Leninism and fascism, from narratives of progress to their postmodern antitheses. The meliorist tendency, the belief that science and technology combined with radical social transformation would conquer disease, death, and other human limitations, can be found woven in the margins of all these traditions.

NINETEENTH- AND EARLY- TWENTIETH- CENTURY TRANSHUMANISM

The historical resurrection of the thread of transhumanist thinking is just beginning (Porter 2001). Recently, for instance, Israeli scholar Ilia Stambler has sketched in the fin de siècle transhumanisms of Russian religious philosopher Nikolai Fedorovich Fedorov, Russian Marxist politician Alexander Bogdanov, and French social scientist Jean Finot (Stambler 2010). In nineteenth-century America, manifestations of the conjoint bioutopian and millennial mindset can be found in both religious and secular circles. The founding of the United States itself, the doctrine of Manifest Destiny, and the religious understanding of the Civil War all, of course, drew on millennialist interpretations of America’s role in prophetic history (Stuckert 2008). In the 1830s, John Darby began to propound the dispensationalist eschatology that still dominates Protestantism today, which promised that believers would be raptured into immortal bodies. In the 1840s, the Seventh-Day Adventists, preaching a strict dietary regimen, emerged out of the apocalyptic Millerite movement in New York. In 1844 Joseph Smith announced the distinctive Mormon doctrine of divinization, that all that human beings can become gods, as his

millennialist Latter-Day Saints migrated west to their new Zion. Members of the Oneida community, America's longest-lived nineteenth-century commune, believed that the Millennium had already come and that people should abjure marriage and property to live in the new Kingdom and practice eugenic arranged breeding to create more perfect children. In the 1870s Mary Baker Eddy founded Christian Science, a doctrine focused on achieving health through spiritual purification, while she and her followers believed she was a key figure prophesied in the Book of Revelation.

Likewise in radical politics, influenced by Darwinism (Pittenger 1993), the idea spread that as human beings evolved out of capitalism, they would also evolve spiritually and corporeally. Grahamite vegetarianism, eclectic medical systems, occultism, Theosophy, and free love were woven through the radical political culture, from abolitionism and women's suffrage to Fourierist communalism and socialism. In Bellamy's novel, *Looking Backward*, which inspired hundreds of socialist clubs in late-nineteenth-century United States and a national political party, the citizens of his future socialist utopia were described as having achieved "a general improvement of the species" leading to:

the fulfillment of the evolution, when the divine secret hidden in the germ shall be perfectly unfolded. With a tear for the dark past, turn we then to the dazzling future, and, veiling our eyes, press forward. The long and weary winter of the race is ended. Its summer has begun. Humanity has burst the chrysalis. The heavens are before it. (Bellamy 1888)

The most influential bioutopian movement of the period was, however, eugenics. The eugenicists believed both that humanity was headed for catastrophe if population growth continued unchecked and unguided by social hygiene and that a radically improved social order could be achieved by combining social reform and planned reproduction for better traits. Some have argued that transhumanism is a modern form of eugenics, albeit a liberal version that proposes genetic betterment through individual germinal choice and gene therapy rather than the mandated sterilization, abortion, and murder.

Almost all contemporary transhumanists are, however, adamantly libertarian on questions of reproductive freedom, and they consider breeding for better traits a foolish distraction from the development of genetic therapies that would make those traits available to all. Transhumanists instead see bioutopians like the British Marxist geneticist J. B. S. Haldane as their most immediate modern precursors. Haldane rejected the pseudo-science and authoritarianism of eugenics and proposed instead, in his 1923 seminal essay *Daedalus, or a Science and the Future*, that eventually people would be able to choose their own genetic traits. In 1926 the Irish Marxist and scientist J. D. Bernal (1929) contributed another strain to contemporary transhumanism with his essay "The World, The Flesh and The Devil." Bernal proposed that humans would eventually

colonize space in genetically modified cyborg bodies with brains linked to machines. For socialist futurists like J. B. S. Haldane, Julian Huxley, J. D. Bernal, and H. G. Wells, worldwide cataclysmic revolution would not only transcend capitalism but also usher in the rapid advance in the sciences and medicine advocated by transhumanism. (See Tirosh-Samuels [2012] for an elaboration on Huxley, Haldane, and Bernal's proto-transhumanism.)

Haldane's friend and fellow geneticist Julian Huxley would coin the term "transhumanism" in the 1920s to describe the belief that humanity could, scientifically and spiritually, transcend itself.

The human species can, if it wishes, transcend itself— not just sporadically, an individual here in one way, an individual there in another way— but in its entirety, as humanity. 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. (Huxley 1957)

CONTEMPORARY TRANSHUMANISM

After the defeat of fascism and the widespread rejection of anything associated with eugenics, bioutopianism nearly disappeared in the 1950s, although both secular and religious apocalypticism was energized by the threat of nuclear annihilation, the Cold War, and the establishment of Israel. In the 1960s, however, numerous trends began to reignite the bioutopian imagination. The emerging counterculture began to advocate alternative healing, appropriate technologies, and the revolutionary potential of psychopharmaceuticals. On the fringe of alternative medicine grew the antiaging subculture, believing that vitamins, hormone replacement, or cryonic suspension offered radical improvements in longevity. Futurists began to seriously debate the ramifications of trends that had previously only been discussed in science fiction, such as genetic engineering, artificial reproductive technologies, and brain-machine interfaces (Toffler 1970). Feminists such as Shulamith Firestone (1970) and Marge Piercy proposed that artificial wombs would liberate women from patriarchy.

In the 1970s, these bio- and social utopian ideas converged around another transhumanist forebear, the New York City-based futurist "FM-2030." Born Fereidoun M. Esfandiary in Iran, FM-2030 began describing our period of history as "transhuman," transitional to the posthuman, and he promoted putatively transhuman lifestyles and social reforms along with transhumanized bodies. He argued for transcending both capitalism and socialism by automating work and expanding leisure. In place of authoritarianism and representative democracy FM-2030 argued for world governance through direct electronic democracy (FM-2030 1970, 1973, 1989).

These trends again converged in Southern California in the late 1980s around a group of futurist thinkers led by the philosopher Max More and his Extropy Institute, which quickly became an international virtual

community through the Internet. The Extropians defined transhumanism as a class of philosophies that seek to guide us toward a posthuman condition, and extropianism was the type that was aligned with anarcho-capitalism (More 1990). The Extropians were especially enthusiastic about the prospect that nanotechnology would enable indefinite longevity and the uploading of consciousness to nanomachine bodies. They believed the state would be made irrelevant and blamed the slower than desired rate of progress in science and medicine on government regulation.

In the late 1990s European transhumanists began to organize around the more academic, politically inclusive, and less millennialist World Transhumanist Association (WTA), founded by the Oxford philosopher Nick Bostrom and British Utilitarian thinker David Pearce. In the 2000s the WTA grew quickly with chapters and allied groups in dozens of countries, and in 2009 it rebranded itself as Humanity+. While the Extropians took new names and believed that technology was advancing so quickly that a total break with the social order was imminent, the WTA/Humanity+ has focused on mainstreaming the transhumanist project, connecting it to the scientific and intellectual debates of the day (Bostrom 1998, 1999). Although the Extropians dwindled and eventually folded into Humanity+ in the 2000s, by having ceded the millennial and apocalyptic message the mainstream transhumanists of the WTA/Humanity+ soon found themselves outflanked by a millennialist spinoff sect, the Singularitarians.

SINGULARITARIANISM

The Singularity was first proposed by the mathematician and science fiction author Vernor Vinge (1993) as the point at which greater-than-human machine intelligence begins rapidly improving itself, bringing an end to human-directed history. In physics “singularities” are the centers of black holes, within which we cannot predict how physical laws will work. In the same way, Vinge said, greater-than-human machine intelligence, multiplying exponentially, would make everything about our world unpredictable. Most Singularitarians believe this point will occur by 2050, although only a minority of transhumanists share this conviction (Humanity+ 2008).

The most prominent Singularitarian is the inventor and futurist Ray Kurzweil (2006), and more important even than greater than human intelligence for Kurzweil is the concept of exponential technological progress. By plotting out accelerating trends such as “Moore’s Law,” the doubling of transistors every 18 months on computer chips, Kurzweil argues that he can predict when accelerating innovation in genetics, robotics, and telecommunications will make possible technologies such as nanorobotic brain-machine interfaces. Kurzweil predicts the melding of human and machine consciousness into an “intelligence explosion”

and super-connected posthuman civilization by 2050, along with radical longevity, uploading of consciousness, and a cure for social problems like hunger and climate change.

Other Singularitarians, such as the computer scientist Hugo de Garis (2005), believe an apocalyptic “Terminator” scenario of runaway robotics is more likely. While Vinge argued that we should aggressively pursue Intelligence Augmentation, or “IA,” to try to stay ahead of artificial intelligence, most Singularitarians are skeptical that the transhumanist program of human enhancement and augmentation could allow human beings to stay in control of machine intelligence, given the limitations of modifying organic brains compared to the exponential mutability of computing and robotics.

While few in the Singularity subculture are as anxious as de Garis about the catastrophic risks of superintelligence, few are as sunny about the post-Singularity prospects for the average person as Ray Kurzweil. In effect, most Singularitarians have a “Left Behind” expectation that they and other well-wired technorati will be among the lucky humans to merge with superintelligence and benefit from the “Rapture of the Nerds” (Doctorow and Stross 2012). Some Singularitarians are certain that “vastened” humans and Friendly AIs will treat baseline humans with godlike compassion, while others are pessimistic about the prospects for the left behind.

The left behind narrative is very explicit in the Singularitarian writings of computer scientist Hans Moravec (1988, 2000). According to Moravec the human race will be superseded by our robot children, among whom, as uploads, some of us may be able to expand to the stars. In his *Robot: Mere Machine to Transcendent Mind*, Moravec says, “Our artificial progeny will grow away from and beyond us, both in physical distance and structure, and similarity of thought and motive. In time their activities may become incompatible with the old Earth’s continued existence An entity that fails to keep up with its neighbors is likely to be eaten, its space, materials, energy, and useful thoughts reorganized to serve another’s goals. Such a fate may be routine for humans who dally too long on slow Earth before going Ex.” Here we have Tribulations and damnation for the late adopters and the millennial outcome for the elect. While Kurzweil acknowledges his similarity to religious millennialists by, for instance, including a tongue-in-cheek picture in *The Singularity Is Near* of himself as an End Times street prophet, most Singularitarians angrily reject such comparisons, insisting that their expectations are based solely on rational, scientific extrapolation. It was presumably a Singularitarian, for instance, who added this to the Wikipedia page on Singularitarianism:

Although acknowledging that there are some similarities between the Singularity and the Rapture (i.e., millenarianism, transcendence), Singularitarians counter that the differences are crucial (i.e., rationalism, naturalism, uncertainty of outcome, human-caused event, nature of the event contingent on human action, no

insider privilege, no religious trappings, no revenge against non-believers, no anthropomorphism, evidence-based justification for belief). (Wikipedia 2012b)

Other Singularitarians, however, embrace continuities with religious millennialism. Futurist John Smart (2005) often notes the similarity between his own “Global Brain” scenario and the eschatological writings of the Jesuit paleontologist Teilhard de Chardin. In the Global Brain scenario, all human beings are linked to one another and to machine intelligence in an emerging global telecommunications web, leading to the emergence of collective intelligence. This emergent, collectivist form of Singularitarianism was also proposed by Peter Russell (1983) in *The Global Brain*, and Gregory Stock (1993) in *Metaman*. Smart (2005) argues that the scenario of an emergent global human-computer meta-mind is similar to Chardin’s eschatological idea of humanity being linked in a global “noosphere” leading to a postmillennial “Omega Point” union with God.

As prophetic history is autonomous of human agency for most religious millennialists, so for most Singularitarians the technological innovations that lead to the Singularity are autonomous of human agency. Wars, technology bans, energy crises, and simple incompetence are dismissed as unlikely to slow or stop the trajectory. Kurzweil insists, for instance, that the accelerating trends he documents have progressed unhindered through wars, plagues, and depressions (Kurzweil 2006). More recently, in *What Technology Wants*, technology writer Kevin Kelly suggests that humanity and technology have been co-evolving along a teleological trajectory to expand intelligence to the universe (Kelly 2010), a teleological vision he shares with Smart and Kurzweil.

The elective affinity between libertarian politics and Singularity can be partly explained by the idea of technological inevitability. Collective agency is not required to ensure the Singularity, and human governments are too slow and stupid to avert the catastrophic possibilities of superintelligence, if there are any. Only small groups of computer scientists working to create the first superintelligence with core “friendliness code” could have any effect on deciding between catastrophe and millennium.

This latter project, building a friendly AI, is the focus of the largest Singularitarian organization, the Singularity Institute for Artificial Intelligence (SIAI), headed by the autodidact philosopher Eliezer Yudkowsky. In “Millennial Tendencies in Responses to Apocalyptic Threats” (Hughes 2008), I parse Yudkowsky and the SIAI as the “messianic” version of Singularitarianism, arguing that their semi-monastic endeavor to build a literal *deus ex machina* to protect humanity from the Terminator is a form of magical thinking. The principal backer of the SIAI is the conservative Christian transhumanist billionaire Peter Thiel. Like the Extropians Thiel is an anarcho-capitalist envisioning a stateless future and funder of the

Seasteading Foundation, which works to create independent floating city-states in international waters. He also is the principal funder of the Methuselah Foundation, which works on anti-aging research. In 2011 and 2012 Thiel was the principal financier of the SuperPAC backing libertarian Republican Ron Paul, and he supports other conservative foundations and political projects on the right.

While Kurzweil is decidedly more liberal than Thiel, as a technoutopian entrepreneur and inventor, Kurzweil shares the broadly libertarian outlook of most Singularitarians. In 2009 Ray Kurzweil co-launched with Peter Diamandis the Singularity University. The project has backing from Google and other corporate sponsors and is housed at the Ames Research Center campus of NASA. At Singularity University entrepreneurs spend tens of thousands of dollars to network with one another and venture capitalists and imbibe the Singularitarian vision that sees their inventions and enterprises as key to the coming millennium. Diamandis recently published, with Steven Kotler, *Abundance: The Future Is Better Than You Think* (2012), which argues that the world is inexorably improving because of technological innovation, the benefits of which will quickly filter down to the poor.

In 2009 the libertarians and Singularitarians launched a campaign to take over the World Transhumanist Association Board of Directors, pushing out the Left in favor of allies like Milton Friedman's grandson and Seasteader leader Patri Friedman. Since then the libertarians and Singularitarians, backed by Thiel's philanthropy, have secured extensive hegemony in the transhumanist community. As the global capitalist system spiraled into the crisis in which it remains, partly created by the speculation of hedge fund managers like Thiel, the left-leaning majority of transhumanists around the world have increasingly seen the contradiction between the millennialist escapism of the Singularitarians and practical concerns of ensuring that technological innovation is safe and its benefits universally enjoyed. While the alliance of Left and libertarian transhumanists held together until 2008 in the belief that the new biopolitical alignments were as important as the older alignments around political economy, the global economic crisis has given new life to the technoprogressive tendency, those who want to organize for a more egalitarian world and transhumanist technologies, a project with a long Enlightenment pedigree and distinctly millenarian possibilities.

TECHNOPROGRESSIVES AND BIOLIBERALS

In my 2004 book *Citizen Cyborg*, I argued for a social-democratic version of transhumanism, "democratic transhumanism," as the natural product of the egalitarian wing of the Enlightenment, one that could unite disparate contemporary political projects. This term has now been

superseded among left-wing transhumanists by the more mellifluous “technoprogressive.” In surveys I conducted in 2003, 2005, and 2007 of the global membership of the World Transhumanist Association, left-wing transhumanists outnumbered conservative and libertarian transhumanists 2-to-1 (Humanity+ 2008). By 2007 16 percent of respondents specifically self-identified as “technoprogressive.”

The Institute for Ethics and Emerging Technologies, founded in 2005 by Nick Bostrom and myself, is the principal organization of technoprogressive intellectuals. Initially the debate between the technoprogressives and the libertarian and Singularitarian transhumanists was around whether government-funded research and health and safety regulations are necessary for the development of emerging technologies, and whether equitable access to enhancement required its provision through universal health care. But the growing apocalypticism within the transhumanist movement has also opened debates over whether public policy is a useful focus for catastrophic risk mitigation versus technoutopian denial or magical technofixes.

In April 2000 *Wired* magazine published an essay by Bill Joy, the chief technologist and co-founder of Sun Microsystems, titled “Why the Future Doesn’t Need Us,” in which Joy contemplated the likely apocalyptic consequences of genetic engineering, nanotechnology, and artificial intelligence. Joy argued that because these technologies can potentially self-replicate, they pose a novel threat and that research on them should be “relinquished,” or banned worldwide. This essay led to debate in transhumanist and futurist circles about whether technologies could be relinquished and what more effective ways to mitigate their risks might be.

The next year transhumanist leader Nick Bostrom (2001) published “Analyzing Human Extinction Scenarios and Related Hazards,” which discussed both natural and man-made catastrophes, from asteroid impacts to totalitarian mind-control, that could end human existence as we know it. When Bostrom became the director of Oxford’s Future of Humanity Institute, he created a program on Global Catastrophic Risks that resulted in a book by the same name in 2008. This growing focus on catastrophic scenarios from transhumanists has forced many to seriously engage with the regulatory and security policies that would mitigate those risks, in addition to promoting the use of emerging technologies that might make civilization more resilient to those risks.

While sections of the transhumanist movement moved to the Left and into more serious engagement with public policy, left-leaning intellectuals in bioethics and public policy, who in the past were critical of transhumanism on a variety of grounds, were becoming more open to alliances with transhumanists. Under the Bush administration the ascendance of the religious Right and of the conservative, Leon

Kass-directed President's Council on Bioethics (2003) had a polarizing effect on biopolitical intellectuals, driving many to more clearly advocate for the right to human enhancement. British bioethicists like Jonathan Glover, John Harris, and Julian Savulescu joined with American bioethicists Arthur Caplan, Henry Greely, Allen Buchanan, Maxwell Mehlman, and Gregory Pence in defense of reproductive cloning, germinal choice, and cognitive enhancement. Belying their protestations to be more moderate than transhumanists, some bioliberals have gone one step further than the transhumanists to argue for a moral *obligation* to adopt enhancements.

RELIGIOUS TRANSHUMANISM

Today self-identified transhumanists are mostly secular and atheist. In a survey conducted of the 5,000 or so members of the World Transhumanist Association in 2007, more than nine out of ten affirmed the statement "Do you expect human progress to result from human accomplishment rather than divine intervention, grace, or redemption?" (Humanity+ 2008). Ninety percent denied "clear divinely set limits on what humans should do," and 90 percent affirmed that their "concept of 'the meaning of life' derived from human responsibility and opportunity, not from divine revelation." On the other hand, while two-thirds identified as atheist, agnostic, secular humanist, or nontheist, a third self-identified with some kind of religiosity or spirituality, including Christian (8%), spiritual (5%), Buddhist (4%), and religious humanist (2%).

One of the largest transhumanist groups is the Mormon Transhumanist Association, which sees transhumanism as the fulfillment of Mormon prophecy. They note in a 2006 document:

Mormon teachings of the Millennium and immortality parallel Transhumanist ideas regarding the Singularity and transhumans in at least the following ways:

First, a period of dramatic and unexpected change is imminent. Although some ridicule and few have recognized its signs, the Millennium approaches, and we should prepare ourselves for the Day of Transfiguration and its attending changes. Likewise, although critics scoff and despite the intuitive linear view of change, the Singularity is nearer than we anticipate, and we should review and mitigate associated risks.

Second, minds and bodies may be changed diversely. In the twinkling of an eye, we and other animals may be transfigured or resurrected to bodies of varying types and degrees of glory. Similarly, information technology may enable genetics, nanotech, and robotics to enhance the minds and bodies of humans and other animals.

Third, anatomical changes may extend lives indefinitely. From one transfiguration to another, exchanging blood for spirit, we may attain immortality. Analogously, as transhumans, we may extend or exchange our biological substrate with another to ensure persistence of our identity.

Fourth, our work may contribute to these changes. Transfiguration and resurrection may be ordinances for us to perform for each other. Comparatively, our science may provide technology that enables us to enhance ourselves and attain indefinite longevity.

While the Mormon transhumanists are the best organized and most successful manifestation of the syncretism of transhumanism and Singularitarianism with religious millennialism, there is no fundamental obstacle to the positive adoption of the Singularity and transhumanist goals of health, longevity, and cognitive enhancement into any faith, as I have argued elsewhere (Hughes 2007), both as acceptable for the faithful and as a part of the fulfillment of prophecy. Unfortunately, so far, there are far more religious who see transhumanism and Singularitarianism as antithetical to their faith and on the wrong side of Manichean struggles to come.

ANTI-H+ APOCALYPTICISM

In an April 2012 survey conducted by Ipsos in 21 countries, 14 percent of respondents said they believed the world would end in their lifetimes (Gottfried 2012). The two countries with the highest levels of apocalyptic beliefs were Turkey and the United States, where 22 percent of the population agreed. In a poll in March of 2012 conducted by the National Geographic Society, a third of Americans believed that a major worldwide disaster would strike within the next 4 years, and two-thirds believed global catastrophe likely in the next 20 years (National Geographic 2012). In a Pew Research Center poll in 2010, 41 percent of Americans said they expect Jesus's return by the year 2050, and 58 percent said they expected another world war in that period (Pew 2010). Of course, all of these apocalyptic expectations are much more common among American conservatives and evangelicals. For instance, majorities of American evangelicals and Republicans see contemporary natural disasters as the fulfillment of End Times prophecies (Samuel 2011).

Many social scientists believe that millennialism, xenophobia, and conspiracism spike in times of economic crisis, but it is hard to say whether apocalyptic expectations are higher today than they have been in the past. Apocalypticism does not require majority adoption to be profoundly disruptive, however, only that small groups believe that ordinary laws and goals are now pointless and that their actions are divinely sanctioned and have world historical importance. That is why the confluence of the emerging millennialist worldview of Singularitarians and transhumanists with the eschatologies of the religious Right is so rife with violent potential.

One example of the working of paranoid ideas about transhumanists into End Times eschatology can be found in the ministry of Tom Horn, founder and director of the website *RaidersNewsNetwork*. A retired minister, Horn

founded Raiders in 1999 to promote his theories about how UFOs, occult phenomena, and transhumanist technologies fit into the End Times. Horn and his growing network of like-minded conspiracists (Horn 2012) promote the common bioconservative accusation that transhumanism is a hubristic form of humanism, replacing the worship of God with the worship of man. Specifically, in books such as *Forbidden Gates: How Genetics, Robotics, Artificial Intelligence, Synthetic Biology, Nanotechnology, and Human Enhancement Herald the Dawn of Techno-Dimensional Spiritual Warfare* (Horn and Horn 2011) and *Nephilim Stargates: The Year 2012 and the Return of the Watchers* (2007), Horn argues that transhumanist technologies will be used by Satan to create “nephilim,” demonic angel-human hybrids that will play some role in the Apocalypse. According to the Horn ally Stephen Quayle, author of *Genetic Armageddon*:

A terrifying future thunders toward mankind, an impending fate embodied by monstrous, blasphemous combinations of human and animal genetic materials, of man/machine cyborgs, and of beings not only with increased capacities and extended life-spans, but also with re-engineered morality void of compassion. This future is so abhorrent as to almost defy the imagination. These new beings, and the transhumanists looking forward to their arrival, will not be benevolent. (Quayle 2003)

While these fringe groups are colorful, they echo a much wider set of anti-transhumanist criticisms from the Christian Right. Since 2002 a growing network of religious conservative bioethics organizations—including the Center for Bioethics and Culture in California, the Center for Bioethics and Human Dignity in Chicago, the Discovery Institute in Seattle, and the Ethics and Public Policy Center and Culture of Life Foundation in Washington, D.C.—have been adding opposition to transhumanism and human enhancement to their agenda alongside evolution, abortion, embryonic stem cells, euthanasia, and, more recently, Obamacare. While these organizations and their spokespeople are not apocalyptic, the criticisms they wage against transhumanism often reflect the view that human enhancement might be not only a spiritual distraction or heresy, but a cause for civil war. For instance, Christian conservative critics of transhumanism frequently point to Julian Huxley’s role as a founder of UNESCO, and the alleged embrace of eugenics and transhumanism by New World Order elites, to paint transhumanism as a central anti-Christian ideology (Taylor 2012), the promotion of which is likely to play a role in the conflict between Christians and the Antichrist (Gillette 2012).

The idea that human enhancement will lead to a civil war between the enhanced and unenhanced has also been promoted in secular bioconservative circles for the last decade. In 2002, for instance, the liberal bioethicists George Annas and Lori Andrews published “Protecting the Endangered Human: Toward an International Treaty Prohibiting Cloning and Inheritable Alterations,” in the *American Journal of Law & Medicine*, in

which they argued that human enhancement should be declared a “crime against humanity,” on the grounds that

the posthuman will come to see us (the garden variety human) as an inferior subspecies without human rights to be enslaved or slaughtered preemptively. It is this potential for genocide based on genetic difference, that I have termed “genetic genocide,” that makes species-altering genetic engineering a potential weapon of mass destruction. (Annas 2001)

More recently in *Humanity's End* (2010) the liberal bioethicist Nicholas Agar argues that posthumans cannot peacefully or equitably co-exist with humans, since “once posthumans come into existence, they may view humans as morally required to defer to them, to permit our interests to be sacrificed to promote theirs. Thus, the path of radical enhancement for some humans significantly threatens the interests of other humans.” On these grounds Agar argues, like Annas and Andrews, that we must forbid human enhancement as a matter of self-defense (Agar 2010).

On the Christian Right these race war speculations are taken with much greater gravity. The Wikipedia page on the “New World Order” notes, for instance that anti-globalist conspiracists

speculate that the global power elite are reactionary modernists pursuing a transhumanist agenda to develop and use human enhancement technologies in order to become a “posthuman ruling caste”, while change accelerates toward a technological singularity. . . . Conspiracy theorists fear the outcome will either be the emergence of a Brave New World-like dystopia—a “Brave New World Order”—or the extinction of the human species. (Wikipedia 2012a)

One of the most prominent promoters of this kind of conspiracy theory is the television and radio show host Alex Jones, founder of the website Infowars where a constant stream of articles, podcasts, and video can be found with titles such as “United Nations Envisions Transhumanist Future Where Man is Obsolete” (Dykes 2012).

There is a precedent for this kind of apocalyptic Luddism leading to violence: Theodore Kaczynski, the Unabomber. Kaczynski waged a bombing campaign for 18 years in the United States against scientists engaged in projects that he thought threatened human nature, principally through cybernetics and genetic engineering. Between 1978 and 1996 Kaczynski mailed 16 bombs to targets in academia, killing 3 and maiming 23 people. He used his bombings to blackmail the media into publishing his 35,000- word manifesto in which he specifically addresses the need to dismantle medicine along with all other parts of industrial civilization, because of the threat from human genetic manipulation. “Man in the future will no longer be a creation of nature, or of chance, or of God (depending on your religious or philosophical opinions), but a manufactured product . . . The only code of ethics that would truly protect freedom would be one that prohibited ANY genetic engineering of human beings . . .” (Kaczynski 1996).

Taking up Kaczynski's mantle in 2011, a loose alliance of anarchist anti-nanotechnology groups in Europe and Latin America have claimed responsibility for the shooting of a nuclear-engineering executive in Italy, bombing attempts on nanotechnology laboratories in Mexico and Switzerland, and attacks on scientists in France, Spain, and Chile. The groups directly cite the inspiration of Kaczynski, and their manifesto argues that nanomedical robotics will inevitably lead to mind control, dehumanization, and runaway "gray goo" that would destroy the earth. They specifically single out Peter Thiel, the transhumanist biogerontologist Aubrey de Grey, and the Singularity Institute among their dozens of targets (ITTW 2011).

CONCLUSION

In the film *Terminator 2* Sarah Connor has a vision of the nuclear devastation that will be unleashed when Skynet wakes and begins to wage war on humans. Her determination to do what is necessary to stop the apocalypse is steeled, and she sets off to kill the scientists involved in the creation of artificial intelligence and blow up their labs. As the conviction spreads among putatively secular Singularitarians that this apocalyptic outcome is a likely result of unchecked computing innovation in corporate and military labs, the puzzle is why so few have been moved to do more than contribute a couple of dollars to friendly AI research. Partly this is because the men attracted to techno-millennialism have not grown up with guns or served in the military. They see the computer as their tool of change, and they rarely live near like-minded comrades with whom they could develop a plan for direct action.

But meanwhile in the Christian and secular apocalyptic subcultures, where guns, tight-knit groups, and visions of apocalyptic violence abound, anxieties about killer robots, genetic engineering, and posthuman elites with genocidal plans are being woven into eschatological timelines. Although abortion clinics, Muslims, and immigrants have so far been the principal targets of far-right direct action, it seems likely that, as the anarchists have now done, apocalyptics will begin to focus on transhumanists and Singularitarians.

Technoutopians on the American Right, such as Peter Thiel, Glenn Harlan Reynolds, and Newt Gingrich, might complicate this story by validating parts of the transhumanist vision for religious conservatives and apocalyptics, although a jihadist who sees genetic engineering and nanotechnology to be part of their arsenal is probably even scarier than one who does not. Groups like the Mormon Transhumanist Association, working within different faith communities might also help defuse millennial violence, although religious transhumanists are usually far too heterodox to be convincing interlocutors.

In radical politics there may also be opportunities for millennial movements to adopt a more nuanced attitude toward transhumanism and the Singularity than the anarchist bombers have this last year. Perhaps our global economic crisis, with widening class divisions and deepening unemployment, will create the context for a new technoprogressive synthesis of egalitarian millennialism and technoutopianism, with promises of universal antiaging and cognitive enhancement, a basic income guarantee and shorter work weeks, a postgender transhuman social democracy with world government. It is remarkable that Francis Fukuyama, who famously argued transhumanism to be the world's most dangerous ideology, and in *Our Posthuman Future* (2002) that transhumanism would destroy democracy, has more recently opined (2012) that the world desperately needs a new global, egalitarian redistributionist ideology and social movement that also embraces technological innovation. Perhaps his appeal will be answered by a form of millennialist transhumanism.

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