Technology and Its Discontents: On the Verge of the Posthuman

Joel Dinerstein

Technology and Its Discontents: On the Verge of the Posthuman

Joel Dinerstein

Immediately after 9/11, a Middle East correspondent for *The Nation* summarized the coming war on terrorism as "[their] theology versus [our] technology, the suicide bomber against the nuclear power."[1] His statement missed the point: *technology is the American theology*. For Americans, it is not the Christian God but technology that structures the American sense of power and revenge, the nation's abstract sense of well-being, its arrogant sense of superiority, and its righteous justification for global dominance. In the introduction to *Technological Visions*, Marita Sturken and Douglas Thomas declare that "in the popular imagination, technology is often synonymous with the future," but it is more accurate to say that technology is synonymous with *faith in* the future—both in the future as a better world and as one in which the United States bestrides the globe as a colossus.[2]

Technology has long been the unacknowledged source of European and Euro-American superiority within modernity, and its underlying mythos always traffics in what James W. Carey once called "secular religiosity."[3] Lewis Mumford called the American belief system "mechano-idolatry" as early as 1934; a few years later he deemed it our "mechano-centric religion." David F. Noble calls this ideology "the religion of technology" in a work of the same name that traces its European roots to a doctrine that combines millenarianism, rationalism, and Christian redemption in the writings of monks, explorers, inventors, and NASA scientists. If we take into account the functions of religion and not its rituals, it is not a deity who insures the American future but new technologies: smart bombs in the Gulf War, Viagra and Prozac in the pharmacy, satellite TV at home. It is not social justice or equitable economic distribution that will reduce hunger, greed, and poverty, but fables of abundance and the rhetoric of technological utopianism. The United States is in thrall to "techno-fundamentalism," in Siva Vaidhyanathan's apt phrase; to Thomas P. Hughes, "a god named technology has possessed Americans." Or, as public policy scholar Edward Wenk Jr. sums it up, "we are . . . inclined to equate technology with civilization [itself]."[4]

Technology as an abstract concept functions as a *white mythology*. Yet scholars of whiteness rarely engage technology as a site of dominant white cultural practices (except in popular culture), and scholars of technology often sidestep the subtext of whiteness within this mythos. The underlying ideology and cultural practices of technology were central to American studies scholarship in its second and third generations, but the field has marginalized this critical framework; it is as if these works of (mostly) white men are now irrelevant to the field's central concerns of race, class, gender, sexuality, and ethnic identity on the one hand, and power, empire, and nation on the other. In this essay I will integrate some older works into the field's current concerns to situate the current posthuman discourse within an unmarked white tradition of technological utopianism that also functions as a form of social evasion. By the conclusion, I hope to have shown that the *post*human is an escape from the *pan*human.

This is an important moment to grapple with the relationship of technology and whiteness since many scientists, inventors, and cognitive philosophers currently hail the arrival of the "posthuman." This emergent term represents the imminent transformation of the human body through GNR technologies—G for genetic engineering or biotechnology, N for nanotechnology, and R for robotics. "The posthuman," as N. Katherine Hayles defined it in *How We Became Posthuman* (2000), "implies not only a coupling with intelligent machines but a coupling so intense and multifaceted that it is no longer possible to distinguish meaningfully between the biological organism and the informational circuits in which the organism is enmeshed." To be reductive, the posthuman envisions the near future as one in which humans are cyborgs—in which the human organism is, for all practical purposes, a *networked being* composed of multiple human-machine interfaces. Underlying cultural beliefs in technological determinism matched with the inalienable right of consumer desire will soon produce what even cautious critics call "a social transformation" at the level of the individual body, as consumers purchase genetic enhancements (to take one example). In other words, steroids, cloning, gene mapping, and surgical implants are just the tip of an iceberg that, when it melts, will rebaptize human beings as cyborgs.[5]

William J. Mitchell calls this new self-concept "Me++"—a pun on the computer language C++—and claims this future is already present. When Mitchell claims to "routinely exist in the condition . . . [of] 'man-computer symbiosis,'" or that he "now interact[s] with sensate, intelligent, interconnected devices scattered throughout my environment," who can argue with him? An eminent design theorist and urban planner at MIT, Mitchell breezily

describes a near future of "high-tech 'wearables'" with implanted computers (e.g., clothes, eyeglasses, shoes) that extend our sense of self over an increasingly permeable body surface. If each person is "jacked in" to dozens of computers within a "few millimeters" of the human shell, will that transform human nature (as many GNR enthusiasts claim)? As Mitchell declares, "increasingly I just don't think of this as computer interaction," but as something like an expansive self. "Me++" is a consumer gold rush: the evolution of the fragile human body into a silicon-based cyborg with superhuman capacities. Here's a complementary—and unexceptional—claim from Rodney A. Brooks, the chair of the Artificial Intelligence Lab at MIT: "We are about to become our machines . . . [we] will morph into machines." Brooks admits this process may bring short-term metaphysical confusion, but he assures readers in *Flesh and Machines: How Robots Will Change Us* that GNR technologies will bring long-term progress.[6]

What do claims for "man-computer symbiosis" have to do with whiteness and religion? Brooks and Mitchell are technological determinists for whom the blithe morphing of the human organism into cyborgs recapitulates the Western tendency to universalize its own perspective. Their works consider the coming of GNR technologies as inevitable, progressive, and beneficial, and their rhetoric assumes universal, equitable distribution of such changes. Moreover, their disregard of social realities perpetuates an unspoken racialized (white) narrative of exclusion that treats technology as an "autonomous" aspect of cultural production illuminating the road to a utopian future that will not require social or political change.[7]

Technological progress has long structured Euro-American identity, and it functions as a prop for a muted form of social Darwinism—either "might makes right," or "survival of the fittest." Here is the techno-cultural matrix: progress, religion, whiteness, modernity, masculinity, the future. This matrix reproduces an assumed superiority over societies perceived as static, primitive, passive, Communist, terrorist, or fundamentalist (depending on the era). The historian of technology Carroll Pursell points out that "the most significant engine and marker" of modernity is "technology ([which is] almost always seen as masculine in our society)," and that only the West invokes modernity as "a signal characteristic of its self-definition."[8] In *Machines as the Measure of Man: Science, Technology, and Ideologies of Western Dominance*, Michael Adas traced the rhetoric of technology as it became the primary measure of intelligence, rationality, and the good society, supplanting Christianity for nineteenth-century colonial powers. Weapons, mass production, and communication networks became the fetishes of colonial dominance and racial superiority, which were

disseminated (for example) in numerous British best sellers through binary opposites of dominance/passivity: "machine versus human or animal power; science versus superstition and myth; synthetic versus organic; progressive versus stagnant."[9] Such oppositions still inform contemporary theories of Western superiority (e.g., "the clash of civilizations," "the end of history"). Casting preindustrial (or premodern) peoples as risk-averse and enslaved to obsolescent ideologies—that is, as not progressing—sentences them to second-class status with regard to the future.

Sturken and Thomas ask two crucial questions about the role of technology in the American cultural imagination: "Why are emergent and new technologies the screens onto which our culture projects such a broad array of social concerns and desires?," and consequently, "Why is technology the object of such unrealistic expectations?" I extrapolate the following two answers from the field's critical framework, by way of Leo Marx, Kasson, Nye, Carey, and Noble (among many others). *New technologies help maintain two crucial Euro-American myths: (1) the myth of progress and (2) the myth of white, Western superiority.*[10]

In a given society, a myth functions as "a play of past paradigm and future possibility," according to Laurence Coupe's study, an act of "remembering and re-creating the sacred narratives of the past." Progress secularized the idea of Christian redemption by inventing (and instantiating) a near-sacred temporal zone—the future—to contain its man-made utopian dreams. A myth cannot be declared in rational terms; it "resist[s] completion" in order to keep up its "dialectic . . . of memory and desire, of ideology and utopia." For a myth to have cultural force, it must be unarticulated; it works as "a disclosure rather than . . . a dogma," an opening into unspoken systems of belief.[11]

Technological progress is the telos of American culture, the herald of the future, the mythic proof in the nation's self-righteous pudding. "Nowhere . . . can we find a master narrative so deeply entrenched in popular imagination and popular language as the mythic idea of progress," notes the historian of technology John Staudenmeier, "particularly technological progress." Yet at the intellectual level, historians Carl Becker and J. B. Bury deconstructed the myth nearly a century ago. Becker even identified progress as a covalent religion at the 1935 Stanford lectures: "the word Progress, like the Cross or the Crescent, is a symbol that stands for a social doctrine, a philosophy of human destiny." For both Bury and Becker, the myth of *social* progress emerged from the Enlightenment idea of the perfectibility of man through the application of reason. That man-made future would be "a more just, more peaceful, and less hierarchical republican society based on the consent of the governed." Instead, over two centuries, technology has piggybacked onto social progress by creating the *rush* of change without social improvement.[12]

"We have confused rapidity of change with advance," John Dewey wrote in a 1916 essay titled "Progress," and four years later noted that "these four facts[—]. . . natural science, experimentation, control, and progress[—]have been inextricably bound up together." For Dewey, the "attitude . . . toward change" itself had changed during the Enlightenment due to scientific advance. What had once been "the Christian idea of the millennium of good and bliss" had been reworked into a man-made ideal spoken of "under the names of indefinite perfectibility, progress, and evolution." The result was that "the Golden Age for the first time in history was placed in the future instead of at the beginning." Once the future replaced heaven as the zone of perfectibility—as powered by technology—"progress" began to function as a religious myth that substituted a sacralized temporal zone (the future) for a sacred spatial one (Heaven).[13]

The sacraments of this belief system are new technological products. The presumption of a continuous flow of new technologies has been inscribed in the cultural imagination and has become a teleological signifier of social progress that helps to *structure* the nation's self-congratulatory can-do optimism in a better future. As historian Michael L. Smith summed it up, "the artifacts of technological innovation—[from] electric lights, automobiles, airplanes, [to] personal computers—have come to signify progress . . . [and] Americans have been asked to visualize the future as a succession of unimaginable new machines and products."[14] More than a century ago, Edward Bellamy, himself a lay pastor preaching a vision of technologically driven utopia in *Looking Backward*, caught the paradox:

> This craze for more and more and ever greater and wider inventions for economic purposes, coupled with apparent complete indifference as to whether mankind derived any ultimate benefit from them or not can only be understood . . . [as] one of those strange epidemics of insane excitement which have been known to affect whole populations at certain periods…. Rational explanation it has none.

Yet the hunger for "greater and wider invention" has not ebbed; it's not the tulip craze. It is instead the sign of a cultural dis-ease, of an ongoing gold rush of the American mind. At sites such as the EPCOT center, Americans pay for the privilege of being "indoctrinated" into a progressive history of technology and "faith in a sanitized, inexorably beneficial, technological future."[15]

For the GNR enthusiasts (as I will call them), the *agency* of progress has shifted—from society (social planning, good government, virtuous leadership) to the individual (quality-of-life, obtainable through constant consumption). In a sense, the Enlightenment utopia of the mind—as the rational host of self-

control, self-mastery, and perfectibility—has shifted to the body. As self-actual-
ization now seems possible through technological advance, the body has become
the locus of consumer desire and the (literal) base for layers of technological
prosthetics. As Vivian Sobchack notes, "the desire for transformation through
technology has . . . detached itself from visions of rationality and [social]
progress and attached itself (with some anxiety) to more subjective states of
technological being."[16] In other words, social relations will not improve through
moral elevation or a more equitable distribution of resources, but through
self-mastery available over the counter. *Social* progress was vested in a faith in
political institutions, centralized planning, and democratic participation. As late
as the 1970s, the utopian ideals of technological transformation tended more
toward the national (transportation networks, nuclear energy, NASA) and even
the domestic (consumer appliances, television) than the personal. The desire
for technological transformation of "subjective states"—via the body—can
be traced to the simultaneous emergence of miniaturized electronics (e.g., the
Walkman, video games, cell phones), psychotropic drugs, and the Internet.

The 800-pound gorilla in the discursive room is the need for a new defini-
tion of "the human"—without which the term "posthuman" is meaningless.
In various ways, this is at the heart of Sherry Turkle's and Donna Haraway's
work, of cognitive scientists and philosophers from Daniel Dennett to Fran-
cisco Varela, and in the utopian claims of futurists such as Hans Moravec and
Ray Kurzweil.[17] A few years ago, veteran *Washington Post* editor Joel Garreau
wondered why the past generation's technological changes transformed work
and home, but left social and political life unchanged. "*Where is the social
impact of this change? Where is the Reformation? Who are the new Marxists?*"
he wondered. Turns out they're GNR enthusiasts, and they're predicting "the
[imminent] transcendence of human nature." At first blinded by cultural lag,
Garreau has produced a balanced presentation of posthuman utopian claims
in *Radical Evolution: The Promise and Peril of Enhancing Our Minds, Our Bod-
ies—and What It Means to Be Human.* Of course, many non-Western peoples
are (by and large) locked out of the discussion since the symbiosis of "human"
and "technology" excludes them (almost by definition). So if, as Sturken and
Thomas claim, new technologies are always "a Rorschach test for the collective
concerns of a particular age," what does the enthusiasm for the "posthuman"
say about postmodern consumer society?[18]

Such a scenario seems tailor-made for the field, since American studies pro-
duced the critical framework necessary to confront this question directly: *Are
our new, improved cyborg bodies waiting for us just around the bend, or is this just
another cycle of technological utopianism promoted through Leo Marx's "rhetoric of*

the technological sublime".[19] That is the guiding question of this article. Building on this long introduction, I will first sketch the roots of technological worship in the European past, and then map the posthuman discourse onto the resultant myths of progress and the Adamic. In the conclusion, I will address the two most important questions: *What are the consequences of the myth of technological progress as it informs white, Western superiority? What possibilities open up if the myth can be delegitimated at the level of national identity?* This is an exploratory essay into a more conscious future.

Progress and the White Adamic

If technology is equivalent to dominion over Nature, then "the religion of technology" (according to Noble) emerged from a few early medieval monks who resurrected the symbolic ideal of the original Adam. They believed the pre-Fallen Adam, immortal and created in the divine likeness, was *recoverable* through individual piety and work in the "mechanic arts," such that men could be co-workers with God in making over the planet to prepare for the second coming. The reach of this concept is long (as I will show), but an American strain took shape in nineteenth-century New England. In his classic work *The American Adam* (1955), R. W. B. Lewis showed how American writers secularized the Puritan ideal of a new Jerusalem by sending male loners out to the frontier, where each could work for "a restoration of Adamic perfection, knowledge, and dominion, [and] a return to Eden." For Oliver Wendell Holmes, only science could bring the "new man," and such "restoration" would owe much to technological transformation. Lewis illuminates a pattern in the texts of Cooper, Whitman, and Thoreau, wherein male bodies mark territory in new (and potentially redemptive) landscapes:

> The hero of the new adventure [was] an individual emancipated from history . . . self-reliant and self-propelling, ready to confront whatever awaited him with the aid of his own unique and inherent resources. It was not surprising, in a Bible-reading generation, that the new hero . . . was more easily identified with Adam before the Fall.[20]

The concept of *the Adamic* is invested in recuperating an Edenic purity earned through virtuous work: it informs the Euro-American myth of Columbus's discovery, Euro-American dreams of space, and the posthuman. A quick sketch is in order.

The first intellectual figure to valorize the "mechanic arts" (i.e., technology) as a means to access the divine was an influential ninth-century Irish monk, John Scotus Erigena. Calling the mechanic arts "divinely inspired," Erigena

elevated practical activity to works of grace and helped masculinize carpentry and crafts. His writings provided an ideological foundation to the "medieval industrial revolution" of the twelfth-century homosocial monastic world. As Mumford showed in *Technics and Civilization*, the creation of watermills, windmills, the spring wheel, and the mechanical clock, along with innovative mechanisms for metal forging and ore crushing, created early systems of mass production that valorized order, rationality, and system; the creation of steady mechanical power created new methods of milling, tanning, and blacksmithing. What Noble calls "the monastic mechanization of the crafts" found its sublime dynamic agent in waterpower and its sublime artistic form in the cathedrals that formed a sacred geography in Europe for five centuries.[21]

The next conceptual element in the Adamic was provided by a twelfth-century Italian monk, Joachim of Fiore, who called for an avant-garde of "spiritual men" to act as agents of the second coming and "recover mankind's original perfection." His influential ideas were later taken up by Francis Bacon, whose widely read utopian work, *The New Atlantis*, published in 1627, imagined a society in which humankind became purified through rational order as applied to social organization; in other words, he imagined a monastic society on a national level. The engineering school is the center of learning in Bacon's work, and he called it "The College of the Six Days' Work"; the spiritual men were in charge of a second, rational, *man-made* creation ("Six Days") meant to improve and redeem the first. The influence of *The New Atlantis* on the history of science, technology, exploration, and globalization cannot be overestimated: it served as a literary blueprint for the Royal Society of London and anticipated the modern industrial laboratory.[22]

In an American context, Columbus arrives as one of those "spiritualized men"—the embodiment of cutting-edge maritime technology. Columbus's closest friends were monks and Franciscan friars, and he spent a great deal of time in monasteries. Columbus's hunger for finding a passage to the Indies was always couched in the language (and vision) of God's purpose and the practice of the sailor's "art [that] predisposes one . . . to know the secrets of the world." Columbus called his voyages to the New World an "enterprise to Jerusalem," and wrote that "God made me the messenger of the new heaven and the new earth of which he spoke in the Apocalypse of St. John . . . and he showed me the spot where to find it." After his second voyage, Columbus walked the streets of Cadiz and Seville in sackcloth; he was dressed on his deathbed in a Franciscan habit and buried in a Carthusian monastery. As many scholars have noted, "after Columbus, paradise became . . . a place," and I will not here rehearse the vision of the New World as a site to redeem an exhausted

Europe through domestication, improvement, and progress, from the parable of *The Tempest* to Europe's "second discovery of America" through technology—Fordism, Taylorism, aviation, speed, and skyscrapers—as rendered in Hughes's *American Genesis*.[23]

The rise of a scientific perspective and the waning of religion during the Enlightenment created fertile ground for transforming the sacred image of the human organism into a mechanical one. For Mumford, the "worship" of machines by white elites was a fait accompli by the late seventeenth century—"the world [had] a new Messiah: the machine"—and this faith was manifested in the "compulsive urge toward mechanical development without regard for . . . the development in human relations." My touchstone would be Julian Offray de la Mettrie's *Man, a Machine* (1748). To de la Mettrie, human beings were "a collection of springs which wind each other up," the human body "a large watch" powered by wheels, and the soul itself nothing but "an enlightened machine." At first reviled, the idea of the "human machine" became a commonplace in the nineteenth century. This fusion of the religious and the mechanical helped usher in an astonishingly fertile period of domestic invention between 1830 and 1860. Leo Marx found in the technological discourse of the period a palpable sense "that inventors [believe they] are uncovering the ultimate structural principles of the universe."[24]

More important, in the mid-nineteenth century technology and the Adamic come together at the level of national myth. In his brilliant synthetic work, *America as Second Creation: Technology and Narratives of New Beginnings*, David E. Nye found that nearly all Euro-American "foundational narratives" of nineteenth-century frontier settlement understood their right to the land, not as the New Jerusalem of the Puritans, but "as the technological transformation of an untouched space." Whether by the axe, the mill, the canal, the steamboat, the railroad, the dam, or the steel plow, the technology "caused" a chain of events, allowing the settlers to participate in what they called a "second creation." The white settlers legitimated their presence from New England to California by putting forth the technology as the agent that conquered the wilderness, thus eviscerating Native American (i.e., "first creation") claims to the land, and giving the United States nothing less than "a national myth of origin." Here's the boilerplate: "A group enters an undeveloped region," and using "one or more new technologies . . . transforms a part of the region." The region becomes prosperous, attracts new settlers, and "the original landscape disappears and is replaced by a second creation largely shaped by the new technology." The narratives are often written or told "in the passive voice and emphasize the technology" as the agent "of a developmental process." It is a minor-key version

of manifest destiny, one town at a time—an "exemplary tale of progress"—often told less for the purpose of establishing national borders than to justify "the assimilation of nature" for industrial society. To use Heidegger's well-known terms, Americans began to "enframe" nature—natural resources—as a set of raw materials, as "standing-reserve" for human consumption.[25]

All founding myths partake in religious concepts: they posit a story of origin, explain a people's right to a given geography, and grant a transcendent reason for that existence (in this case, progress and improvement). Nye's analysis reveals how the concept of the Adamic evolved here from an individual, male ideal to a group (and then national) identity as a result of frontier experiences. Instead of a transhistorical symbolic ideal of a materialist, autonomous male (Adam), a group of bodies laid claim to a new land through their participation in its (technological) improvement. In other words, Euro-American bodies affirmed their right to new geographical space without recourse to conquest narratives; instead, this "technological creation story" became the formula for justifying the "improv[ement] of any Eden whose inhabitants were few or ignorant or lacked a railroad." One of Nye's myriad examples is an 1859 lecture by Abraham Lincoln on inventions in which he proclaimed that "old fogie, father Adam . . . [was] a very perfect physical man," but he lacked sophisticated communication networks (the telegraph, the railroad), did not enjoy food "brought from the other side of the world," and was thus "no equal of Young America." The New Adam *was* Young America.[26]

The fusion of progress, technology, and religion into a white mythology is then continually reinscribed. The massive social transformations brought on by telegraph, railroad, and electricity created a sense that technology was "white magic" (to use Franco Moretti's term), and "the awe and reverence once reserved for the Deity . . . [became] directed toward technology." History as "a record of . . . progress" became doctrine during the Enlightenment, but with "rapid industrialization . . . the notion of progress became palpable; 'improvements' were visible to anyone." As new machines continually altered the workplace, as communication and transportation networks collapsed time and space, modernity became a social fact: one's life did not resemble one's parents' or grandparents' lives. As Marx summed up the transformative moment, "To look at a steamboat [or a locomotive] . . . is to see the sublime progress of the race."[27] The markers of the difference were machines, technological products, and the effects of technological networks.

Carey and Quirk revealed the role of "the future" in this ideological mix, and showed how Americans colonize this temporal zone with the utopian repercussions of new technological networks. Their examples were the telegraph,

railroad, telephone, electricity, automobiles, and finally, computers; for each, advocates predicted a new day and "a radical discontinuity from history." This quasi-sacred nature of technology has marked it, for Americans, as "a force *outside* history and politics." Technology thus becomes the prime mover of an ongoing "millenarian impulse," and futurists (public relations workers, scientists, writers, and businessmen) "cast themselves . . . [as] secular theologians composing theodicies for . . . [their] technological progeny." For example, utopian claims for computers in the 1970s were seen less as marketing reports than as dispatches from the future's frontlines by "self-abnegating servants" plugged in "to the truth and the future as determined by the inexorable advance of science and technology." Grafting the rhetoric of technological revolutions onto the millennial impulse creates the necessary conditions for the mythic system of progress; over and over again in "contemporary futurology," the emergent technological network reboots the national faith. "In modern futurism," Carey wrote as if anticipating posthuman rhetoric, "*it is the machines that possess teleological insight.*"[28]

Rather than cast any doubt on the technological fix, Americans have instead witnessed the rise of the contemporary Adamic: first, in the white, homosocial world of NASA, which has functioned as a monastic guild for two generations, and second, in popular culture. From the 1950s through the 1970s, nearly all of NASA's key positions were filled by evangelical Christians. NASA's director, Werner von Braun—ex-Nazi rocket scientist, father of the U.S. space program, and born-again Christian—declared that the purpose of sending men into space was "to send his Son to the other worlds to bring the gospel to them" and to create a "new beginning" for mankind. In the 1950s, scientists and physicists believed new planets and space colonies might become a safety valve for a planet poisoned by nuclear winter. Physicist Freeman Dyson wrote the "Space Traveler's Manifesto" in 1958, and he supported the development of nuclear energy to secure a power source for a starship that was mankind's best chance to survive apocalypse. The claim was seconded by Rod Hyde, NASA's group leader for nuclear development: "What I want more than anything is to get the human race into space . . . It's the future. If you stay down here some disaster is going to strike and you're going to be wiped out." Directed by the "spiritual men" of NASA, humanity would restart on another world so that human beings could still be headed for a redemptive future even as they left behind the mess of the impure.[29]

Ninety percent of American astronauts have been "devout Protestants"; many carried Bibles and Christian flags in their spacesuits. "I saw evidence that God lives," Frank Borman reflected of his experience as Apollo 8's commander;

Apollo 11's Buzz Aldrin received radio silence from NASA to read the first fourteen lines of Genesis while walking on the moon. Aldrin took communion with a kit packed by his pastor containing "a vial of wine, some wafers, and a chalice," as well as "[a] reading from John 15:5"; he later reflected with joy that "the very first liquid ever poured on the moon and the first food eaten there were communion elements." In 1969, technology and religion fused with national myth and political power: President Richard Nixon pronounced the week of Apollo 11's flight and landing on the moon "the greatest week since the beginning of the world, [since] the Creation." Nixon was immediately reprimanded by Reverend Billy Graham—his personal religious leader—who declared there had indeed been three greater events: Jesus Christ's birth, crucifixion, and resurrection.[30]

If landing on the moon was the fourth greatest week-long event since the Creation, it is significant that it was accomplished by the first cyborgs: astronauts. Continually attached to technological networks through spacesuit (synthetic second skin) and spaceship (nurturant, home, environment), astronauts were the first human-machine interface. Norman Mailer captured the posthuman shift at the Apollo 11 launch:

> [Neil] Armstrong . . . space suit on, helmet on, plugged into electrical and environmental umbilicals, *is a man who is not only a machine himself in the links of these networks*, but is . . . in fact a veritable high priest of the forces of society and scientific history concentrated in that mini-cathedral, a general of the church of the forces of technology.

In *Me++*, Mitchell named all of the linkages necessary for space travel, from "extravehicular mobility units (EMUs) . . . [with] internal and external plumbing systems," to "backpack primary life support systems (PLSSs), with supply and removal systems . . . [as] controlled from chest-mounted consoles." Each astronaut wore a "maximum absorption garment (MAG) to collect urine, a liquid cooling and ventilation garment (LCVIG) to remove excess body heat, an EMU electrical harness (EEH) to provide communication and bioinstrument connections, a communications carrier assembly (CCA) for microphones and earphones . . . and a polycarbonate helmet with oxygen supply and carbon dioxide purge valve." To Mitchell, as an astronaut, "you got to sleep with your extrabiological body double."[31]

That *Columbia* was the name of the command ship of Apollo 11 and the third space shuttle connects the so-called Age of Exploration with the age of space travel: visionary quests for new worlds rationalized by the search for new economic markets (domestic or foreign), historicized as the pursuit of "pure" knowledge, and informed by a search for God (and directed *by* Him).

Whether the Adamic of the seas or the skies, this mythic concept is still concerned with the same dialectic of individual and national accomplishment: it's still about being the first body on some new frontier, planting seed and flag, and rationalizing national fantasy in the quest to redeem Fallen Man on a land claimed for Edenic purification. Think of *Star Trek*'s opening as a spell or a chant that reproduces the Adamic in space, *the final frontier*. "These are the [spiritualized] men of the *Starship Enterprise*. Their ten-year mission . . . [is] to boldly go where no man has ever gone before." Again, the first body (or bodies) in (a new) space. Again, the muted martial trumpet cry to the future and imperialist dominion over new spaces. As Sobchack points out, "one need only remember that the *first* American space shuttle—*The Enterprise*—was named after (and perhaps carried the same ideological baggage as) the flagship of . . . *Star Trek*."[32]

It may seem like a long jump from Erigena to Columbus to NASA, but it is an identifiable (and ongoing) tradition. The posthuman Adamic reproduces the tradition's three elements: (1) the valorization of the "mechanized arts" through the thrill of scientific discovery and exploration; (2) the shadow Christian tradition of redeeming Fallen man (or an exhausted geography); and (3) the competitive challenge of being the first body in a new environment—whether physically on a new continent or a new world, or now, mentally, in cyberspace. This is not an essentialist genealogy, but a record of cultural practices vetted by ideology. This white mythology has already produced a posthuman Adamic discourse—and myth—that promises nothing less than the technological transcendence of the individual human organism. It bears repeating: *technology is the American theology*. As Rosalind Williams states succinctly, "to affirm that technology drives history is to deny what [or that] God does."[33]

The Posthuman Adamic

Here's a provocative statistic: a Harris Poll showed that 42 percent of American parents would "use genetic engineering on their children to make them smarter . . . [and] 43 percent, to upgrade them physically." A separate poll found that more than a third would even be willing to "tweak their children genetically to make sure they had an appropriate sexual orientation." As Lori B. Andrews has argued, therein lies a market as large "for prebirth genetic enhancement" as motivated the sales of Prozac or Viagra. Thus, genetic manipulation will probably be at the cutting edge of transcending the limitations of the human body. In fact, when the film *Gattaca* was released—a dystopic vision of a society based on genetic hierarchy—a toll-free number used in one of its trailers (1-

888-4-BEST-DNA) was swamped with calls for genetic upgrades; the American Society for Reproductive Medicine had to issue an official denial of its participation. According to Princeton biologist Lee Silver, "the use of reprogenetics is inevitable. It will not be controlled by governments . . . or even the scientists who create it. . . . the global marketplace will reign supreme."[34]

At the moment, Kevin Warwick and the Australian performance artist StelArc represent the posthuman Adamic from the robotics side—a man-made "second creation" of the human body for an imminent future in which (to quote StelArc's website), "THE BODY IS OBSOLETE." StelArc has had a third electronic arm surgically implanted in his stomach and, in performances, creates art and performs mathematical equations coordinating his three arms.[35] In 2002, robotics professor Kevin Warwick had an electrode array surgically implanted in his forearm that allowed him to transmit his thoughts over the Internet and to access all electronic interfaces in his office building. Having an electronic connection means that "your physical capabilities extend as far as the internet will take you, but so too your powers of absorbing information. . . . You are not limited . . . to taking in information from your local vicinity via your eyes and ears." Being directly jacked in to the computer transcends "the simple human-body perimeter" through direct electrical connection of human and machine; Warwick has successfully sent his "brain signals" all over the world. "A cyborg body is truly a global one."[36]

In *I, Cyborg*, Warwick gave three passionate reasons for his experiments: curiosity of human-computer symbiosis; the feeling of reentry when "returned to the ranks of humanity"; the thrill of discovery, "my desire to be the first cyborg . . . the pioneer." He thought himself "in a similar position" to Charles Lindbergh or the explorers: "I could go where no one had ever gone before." For example, Warwick and his wife, Irena, have communicated over the Web in near-telepathic connection through electrode arrays in both their hands. Their first successful "direct nervous system to nervous system link-up" was thrilling; Warwick's first thought was to run over and give his wife a hug, but he realized "we both still had our nervous systems wired up. . . .We didn't have to hug, we didn't have to say anything to each other. We had a new way—our own way—of communicating now." Here is the Adamic reproduced in all its glory: being first in a new landscape, transcending the organic body, redemption and progress powered by the mechanized arts.[37]

Various kinds of permanent silicon implants are already working in hundreds of human bodies: cochlea implants in the inner ear, implants that control the tremors of Parkinson's disease, direct neuroelectronic interfaces that allow fluid, integrated motion with prosthetic legs. In each case, "there is direct electri-

cal connection between the electronics of the silicon device and the nervous system of the patient."[38] These technologies are emergent, not speculative, so GNR enthusiasts cannot be dismissed as crackpots promising us a Jetson-like future and individual jetpacks. And, often as not, they are the academic cream of MIT, Stanford, and Cal Tech.

And isn't moving the machines inside the body the logical next step in technological evolution? Since the early 1980s, the consumer fruits of the electronic and computer revolutions have stirred every younger generation to a faith in a peaceful, plentiful, groovy future made possible by technological fables of abundance. In addition, ads now help young consumers visualize every individual as a mobile network, with iPods and Blackberrys enabling 24/7 mobile connectivity. GNR enthusiasts have simply reenvisioned the human body as a computer array. Brooks imagines implanting a screen in the part of the brain responsible for visual processing with an internal on/off system that jacks the mind into the Internet. Like many others, he is exalted by these ideas: "What if we could make all these external devices internal, what if they were all just part of our minds, just as our ability to see and hear is just a part of our mind?" As Garreau reflects, "for all previous millennia, our technologies have been aimed outward, to control our environment. . . . [Now] we have started a wholesale process of aiming our technologies inward."[39]

This is perhaps most true for nanotechnology (N), the science of manipulating subatomic particles to take advantages of properties (such as conductivity) present only at that level. Medicine is its primary locus of application, and its researchers foresee robot surgeons dispatching tiny programmed "nanobots" into infected areas to cure the body without surgery or chemotherapy. Ray Kurzweil predicts that smart nanobots will easily "reverse the environmental destruction left by the first industrial revolution," provide safe, cheap, clean energy, and "destroy . . . cancer cells, repair DNA, and reverse the ravages of aging." Nanotech pioneer Robert A. Freitas, whose research concerns the potential for nanobots to perform brain scans, goes even further. Here's an FAQ from his website: "What would be the biggest benefit to be gained for human society from nanomedicine?" His response: "Nanomedicine will eliminate virtually all common diseases of the twentieth century, virtually all medical pain and suffering, and allow the extension of human capabilities, most especially our mental abilities." Humans will soon have the storage capacities of computers, according to Freitas, since a "nanostructured data storage device" is no bigger than a neuron and can hold "an amount of information equivalent to the entire Library of Congress." Once all human beings have "extremely rapid access to this [volume of] information"—and, I suppose, regular upgrades—Freitas

foresees immense social changes. What will be nanomedicine's biggest success? "The most important long-term benefit to human society" will be "the dawning of a new era of peace." Why will that occur? "People who are independently well-fed, well-clothed, well-housed, smart, well-educated, healthy, and happy will have little motivation to make war." Apparently, in the nanotech-powered utopia, immortality supplants the will to power and the seven deadly sins, since "human beings who have a reasonable prospect of living many 'normal' lifetimes will learn patience from experience."[40]

As noted above, posthuman utopianism differs from all past visions—from Plato's to Thomas More's to Charlotte Perkins Gilman's—in being based not on social planning but on self-actualization. As one futurist rhapsodizes over the advantages of cyborg life:

> Just a small piece of silicon under the skin is all it would take for us to enjoy the freedom of no cars, passports, or keys. Put your hand out to the car door, computer terminal, the food you wish to purchase, and you would be dealt with efficiently. Think about it: total freedom; no more plastic.[41]

This superficial notion of "total freedom" aside, the obvious context is our radically individualistic consumer society. Posthuman utopians ignore what Albert Borgmann simply calls—in response to their claims—"the social dimensions of human being." Humans are socialized by parents, siblings, teachers, and environments, and acquire consciousness (and self) in dialogue with friends, co-workers, and nature itself. As Borgmann claims about the relationship of individuality and socialization: "Each of us is a unique and inexhaustible locus of convergence and transmission through our ancestry, both evolutionary and historical, through our descendants, through the sensibility of each of our organs, through our pleasures and pains, through our wounds and our scars, through our attacks and our embraces." To assume that upgrading the "wetware" will lead to utopia misunderstands the mundane aspects of being human. As Borgmann claims for himself: "I shape my conduct in emulation, competition, or companionship with others."[42]

To be reductive, GNR enthusiasts are able to evade the "social dimensions" of human *being* because they work from the "computational model" of the brain (the dominant paradigm of cognitive science). To GNR enthusiasts—as to cognitive scientists and philosophers—the human organism is simply a special kind of machine composed of electro-chemical networks. As Hayles has shown, in the decade after World War II, cybernetic theorists shifted the idea of mental processes from "thought" and "consciousness" to "information." As

they ratcheted up "analogs between machines and humans," early cybernetic theorists began to "*construct the human in terms of the machine.*"[43] In other words, they externalized the model of the mind and bracketed off subjective experience as irrelevant. Over three generations, "information" supplanted "thought" and the speed of computation became the measure of mental power. According to John Searle, most cognitive scientists do not "regard consciousness as a genuine scientific question," and most textbooks on the brain "have no chapters on consciousness." There are alternative models ("the embodied mind," "the phenomenological mind"), but cognitive science remains devoted to the computational model, which has "virtually nothing to say about what it means to be human in everyday, lived situations."[44]

GNR enthusiasts thus conceive of human organisms as nodes in technological networks rather than in social ones. To cognitive scientist Andy Clark, for example, human beings have always been "natural-born cyborgs," and the human organism is simply "tools all the way down." ("Tools-R-Us," he quips.) In reading back into history the model of the "man-machine," computationalists like Clark shift the idea of technologies (or tools) from *prosthesis*—tools used externally, by the body and as an extension of it—to something like *techno-symbiosis* (i.e., tools wired into the mind and body, neural subsystems as computer programs). As Hayles has shown, cyberneticists consider human beings as simply "body surfaces . . . through which information flows"; if so, she wonders, "who are we?" In *Posthumanity* (2004), philosopher Gerald Cooney spins it slightly differently: will a body outfitted with a dozen prosthetics—thin body armor, internalized electronics—feel "just as much *my* body and part of *myself?*" Is that kind of cyborg "as much a human being?" Either perspective "implies the deconstruction of the autonomous self," and both cognitive scientists and cultural theorists now meditate on how the cyborg "self" would work at the level of mind.[45]

It is certainly possible that the transformation from the liberal human subject to Me++ will be no more chaotic than, say, the concurrent experiences of modernism and antimodernism from 1880 to 1940. As Clark argues, at any given moment, the self is "a conception of whatever matrix of factors we experience as being under our direct control." If the thought of moving a prosthetic leg creates motion in it, the mind accepts it as part of "self." Cooney concurs:

> as long as my synthetic hip joint interacts with adjoining bone structures in a way that is equivalent to that of the natural joint, and as long as synthetic neurons interact with each other . . . in the relevant ways, there will be walking and thinking. It isn't just that we couldn't tell the difference, but there *would be no difference at the level at which these functions occur.*

The same would go for implanted silicon chips and connection with others through external networks; there is obvious precedent with regard to pacemakers and hearing aids. If so, then "truly hybrid biotechnological selves" requires only individuals who welcome such a self-image, and even posthumanists agree "social acceptability" may take two generations. Still the networked being—the cyborg—has every possibility of "feeling" like a self; *Me++* renders this upgraded self-concept in an apt and very American locution.[46]

Yet I am troubled by the technological utopianism in Clark, Brooks, Mitchell, Kurzweil, and others. For example, Clark claims his computer is now central to his self-concept and "the recent loss of my laptop had hit me like a sudden and somewhat vicious type of . . . brain damage."[47] This is metaphorical, not metaphysical; anecdotal, not representative. As an evacuee from New Orleans during Hurricane Katrina, I read dozens of testimonies that first week from people who lost all kinds of material possessions, professional equipment, art and lab work, sentimental talismans. Not once did anyone equate life and/or limb with his computer or her brain power. In fact, I read at least a dozen articles with some version of this offer: "I left my car on Dryades St. near Valence; if you can read this, smash the window and drive to safety." Once safe, people cried out for those lost and dead, not their computers. Since my return, I have spoken to people who lost their homes, their cars, their musical instruments, their computers—not a single mention of a ghost-PC nagging at the corners of sensorimotor memory. Is it only technological utopians who are trying to drag us into a posthuman future?

Equally suspect is the ebullience with which GNR enthusiasts disdain their own human bodies. Warwick thinks of cyborgs as "upgraded humans," and damns all who will not take advantage of implants to "the subspecies human race." Clark believes the brain has outgrown its "biological skinbag," and insists it will not be "bound and restricted" anymore; he thinks of himself less "as a physical presence than . . . a kind of *rational or intellectual* presence." For Brooks, we need not fear the transformation into cyborgs, since "we, the man-machines, will always be a step ahead of them, the machine-machines." Kurzweil predicts that by 2099 all humans will be "machine-based" (i.e., "they [will] no longer have neurons, flesh or blood") except for the most obstinate Luddites. In *Radical Evolution*, Garreau sketches the coming divide between "the enhanced" and "the naturals," with the latter becoming increasingly uncompetitive. Apparently, the present human organism is obsolete—and good riddance to it. Yet Sherry Turkle reports that people most often distinguish between human and computer characteristics by "dwell[ing] long and lov-

ingly on those aspects [of life] . . . that are tied to the sensuality and physical embodiment of life."[48]

The presumptions of GNR enthusiasts in *declaring* the shift to the post-human are the arrogant proclamations of a white technological priesthood presiding over globalization. As Langdon Winner points out in "Are Humans Obsolete?," not only do

> post-humanists show little awareness of their deep cultural biases and . . . the breathtaking cultural arrogance their proposals involve . . . [but they] have not looked carefully at how their notions reflect unstated, unexamined preconceptions rooted in their own highly rarified, upper-middle-class, white, professional, American and European lifestyles.

Winner also rightly wonders whether submitting genetic enhancement to market forces will create a genetic divide that will dwarf the digital divide.[49]

The rapid pace of innovative GNR technologies has imbued scientists with a sense that "humanity [is] now conceived as godlike in its utterly free creative power and its responsibility for the future."[50] They, in turn, try to convey that sense of mastery to the future's consumers: "Having such things implanted in our brains will make us tremendously more powerful," Brooks writes, and "we will be[come] superhumans in many respects."[51] Yet when enthusiasts herald the wave of new miraculous technologies, there is never a mention of "the spectacular series of disasters" within living memory of technologies meant to give humans mastery over their environment: "Hiroshima, the nuclear arms race . . . Chernobyl, Bhopal, the Exxon oil spill, acid rain, global warming, ozone depletion."[52] Not only are there many levels of "*unintended* consequences" to technological products—as documented in Edward Tenner's *When Things Bite Back*—but in the United States, scientists can barely garner funding to confront *obvious* consequences (e.g., global warming, coastal erosion). The forecast of a GNR-powered utopia sustains itself by ignoring wasted landscapes and offering in its place the image of our individual bodies as theme parks.

This future depends on the practical reality of the computational model of the brain. According to Searle, computationalists "howl with outrage" when alternative models of the brain are presented—in a manner more like "the adherents of traditional religious doctrines of the soul" than scientists. His theory is that their defensiveness is rooted in "the conviction . . . that computers provide the basis of a new sort of civilization—a new way of giving meaning to our lives, a new way of understanding ourselves." The computational model is "profoundly antibiological" and ignores that the brain is embedded in the body and its biological processes. The model reeks of both dualism and

atavistic rationalism—Aristotle's godlike (or machine-like) mind imprisoned in the impure or loathed animal body (the "meat body," "wetware").[53] But if the brain is a computer, it can be integrated with all other computers, and all the predictions of GNR enthusiasts make sense.

It is the only future GNR enthusiasts can imagine. Technology—or, more precisely, scientism—is their belief system: it provides faith in the future, continues the myth of progress, and keeps all definitions of the human in the hands of Western science. Consciousness is bracketed off as so much white noise; to cognitive scientists and GNR enthusiasts, the human being is a sophisticated network of neural subsystems whose constant upgrading becomes the purpose of posthumanity. "If we can create minds simply by designing computer programs," Brooks predicts, "[then] we will have achieved the final technological mastery of humans over nature."[54] Again, the "second creation" ideal.

Cooney asks a simple question: "Do we even want this [posthuman] future?" He first puts progress on the stand: "What is our criterion for judging that major technological developments constitute progress rather than posing unacceptable dangers and threatening [a] . . . loss of fundamental values?" Conceding that market forces will likely drive genetic enhancement, he wonders, "Can we allow the market to determine the outcome when our human nature is in play?" This leads to his crucial question: "What [about human life] . . . requires a posthuman future?"[55] I reiterate: only the myths of progress, the Adamic, and white, Western superiority *require* a posthuman future. The posthuman is the dream of bodies of pure potentiality—ones that do not decay but plug into networks of information and pleasure.

With the computational model we get a posthuman utopian future—the human being as perfected machine. If the brain is a computer, human neurocircuitry finds a nonbiological home. If it's not, then we get the same old greedy humans abusing power and rationalizing environmental devastation and global misery via technological progress. This synthesis of Western rationalism, Christian disdain for the animal body, and superiority over the Other comprises a faith-based narrative whereby scientists eliminate all subjective experience to focus on the dream of a mechanical brain from which they can then upgrade the human race. On the first day of the future, Western scientists create a cyborg and the long-sought-after second creation is achieved. In the meantime, since all technology is reflected in cultural narratives, a posthuman Adamic myth emerged in popular culture concurrently with GNR technologies.

The Terminator is the future's posthuman Adam. In each of the three Terminator films, beginning in 1984, the cyborg model T-800 (Model 101) arrives stark naked—ushered in by bolts of lightning, hurricane gusts of wind, and a

breach in the time-space continuum. His buff, perfect, white Aryan male body is fetishized in each opening scene, and we watch his naked perfection acquire clothes and weapons by making "girlie-men" of punks, bikers, or slackers. He is a bolt from the future blue, the rejuvenated Adam of the Next Testament: on the first day of the future, God creates the Terminator.

The Terminator is the cyborg successor to fallen, puny man. A flesh suit zipped over a computer matrix combining GNR technologies, the Terminator must be martyred at the end of every film. Each time he returns, reprogrammed and reborn from the future to restart the story. Each reappearance challenges audiences to confront the underlying tensions of imminent posthumanity: will we still be recognizable to ourselves if we morph into cyborgs? If the "dream of robotics [is] that we will gradually replace ourselves with our robotic technology," Bill Joy repudiates that dream, asserting that "the[se] robots would in no sense be our children." Cooney raises this issue as well: will we recognize cyborgs as "a human outcome"?[56]

Cooney's and Joy's responses point up the significance of the Terminator as a floating signifier of the posthuman Adamic.[57] So long as cyborgs are imagined as superhuman male bodies—as the perfect, desired, mechanical Other, as motorcycle-driving, shades-wearing, gun-toting, Western heroes of the future, as *male* technological society's *man*-made technological saints—then the posthuman dream of evolving into cyborgs both perpetuates the mythic triumphalism of progress and constitutes a refusal to acknowledge the limits of an individual human body and an individual life. To adapt Richard Slotkin's classic formulation, call it *regeneration through technology*.[58]

Judgment Day: The End of Progress

I will conclude with Sturken and Thomas's most important question of all: "How is it possible to think about technologies outside of these frameworks?"[59]

Nearly a generation ago, Haraway recognized the need for a more "imaginative relation to technoscience that propound[ed] human limits and dislocations—the fact that we die, rather than Faustian . . . evasions." Yet as popular culture and well-funded GNR enthusiasts have more influence than academic theorists, they have commandeered cyborg iconography; the necessary corrective of conceding the "human limits" of biological processes has yet to occur. Haraway has since called for new metaphors—such as trickster figures (e.g., Coyote)—to "refigur[e] possible worlds" by thinking outside of techno-science; this hasn't happened even within the humanities. Instead, we have seen the rise of the posthuman Adamic.[60]

For Nye, the "technological creation story has long remained dominant" because questioning it required a reassessment of history, social justice, and ethics—as well as the demystification (and demythification) of every keyword in the techno-cultural matrix. Here's Nye's assessment of why the nineteenth-century "second creation" narrative remained dominant until the 1960s:

> Rejecting the foundation story . . . meant recognizing historical injustices to the first inhabitants, accepting environmental limits, and acknowledging the ideological nature of the free market. Rejecting the foundation story implied the loss of white entitlement to the continent. Discarding second-creation stories required acknowledging cultural conflicts and listening to counter-narratives.[61]

Such counternarratives of the frontier now exist: Nye points to ecofeminism and Native American accounts, the works of wilderness advocates and border-lands scholars. Perhaps there is long-term potential for the trickle-down of such counternarratives to transform the national mythos, but the techno-cultural matrix remains strong.

To become conscious of the underlying mythology guiding their utopianism, GNR enthusiasts would need to acknowledge the cyborg's white body, their ideal of white progress, and the historical conflation of technology and religion. Many scholars have traced the social construction of the white body as the normative, ideal human body (e.g., Richard Dyer's *White*), but only recently have nonwhites begun to answer back from an empowered cultural position. In *White Theology: Outing Supremacy in Modernity* (2004), religious scholar James W. Perkinson claims that if Euro-Americans aspire to maturity, "the white body must be returned somehow to its history, [and] white identity reincarnated in local community and global cosmology." To do so, Perkins claims, Euro-Americans must specifically leave *black* bodies alone: "blackness can no longer be erected as a buffer against the demands of maturity, a screen against which to play out fear and fantasy, despair and desire."[62] An interesting claim, but such a separation is impossible due to hybridity at every level: cultural, social, genetic, artistic, intellectual, philosophical.

In my *Swinging the Machine: Modernity, Technology, and African-American Culture Between the World Wars* (2003), I argue that Euro-American bodies have been specifically *colonized* by African-American music, dance, kinesthetics, and speech. In fact, white, Western bodies have appropriated the moves and grooves—and thus, the embodied philosophies—of many cultures over the past two centuries (e.g., Latin American, South Asian). Consider the acculturation involved in the practice of martial arts and yoga, or in the appropriation of various ethnic music and dance traditions (not to mention ethnic foodways).

In fact, my theory of posthuman escapism is that *it is based in the fear of understanding the human organism as a multiethnic, multicultural, multigenetic construction created through centuries of contact and acculturation.* In *Swinging the Machine*, I theorized a dialectic of technology and African American culture: I showed that in every generation, African American music (and dance) provides *survival technologies* in dialogue with that era's machine rhythms and technological systems.[63] Any new definition of the human must account for the historical *failure* of white minds and bodies to create appropriate cultural responses to oppressive technological systems. The denial of this failure gives rise to the utopian projections of GNR enthusiasm. In other words, *the posthuman is an escape from the panhuman.*

Kurzweil has mapped responses and fears of the posthuman future—like mine—onto a three-stage transition model for accepting new technologies: (1) "awe and wonderment at their potential *to overcome age-old problems*"; (2) "a sense of dread at the new set of dangers"; (3) realizing "*the only* viable and responsible path is to set a careful course . . . [to] reap the benefits while managing the dangers." Has any nation ever actually succeeded at steering such a "careful course"? Note Kurzweil's rhetorical assumptions: that new technologies "overcome age-old problems"; that autonomous technology cannot be questioned, only managed; that our dread is cowardice. Given market forces and the consumer drive for self-improvement, these technologies may be inevitable, but nothing in human history points to posthumanity living deeper, richer lives that benefit the *majority* of the earth's peoples. (As Mike Davis has recently shown, a billion people now live in slums.) Tools and technologies are not inherently good or bad, inevitable or autonomous, progressive or regressive, as scholars from Mumford to Nye have always insisted; they are merely vehicles and applications of human beings.[64]

"If progress means to go forward," Carl Becker wondered in 1936 with the Nazis in ascendance and the Stalin purges in full bloom, "[then] forward to what end, to the attainment of what object?" In 1963, theologian Paul Tillich reduced progress to the pejorative term, "forwardism." More to the point here, Bill McKibben wonders how a future of robots and genetic enhancement is "something 'higher' and 'better'" for techno-utopians when they so rarely pay even lip service to social needs such as "feed[ing] the hungry."[65] GNR enthusiasts assume technological progress will produce social progress. Yet even if GNR technologies come on-line as predicted, why would this produce a better society rather than just health, hedonism, and mobility for the upper classes? *It won't*; that's just how myth works. Technological progress is the quasi-religious myth of a desacralized industrial civilization; it is sustained through new technological products, not empirical social change.

The real questions we need to confront are these: What is progress *for*? What is technology *for*? Scientists might rightly claim such questions are not within their purview, but they surely demand attention from American studies scholars. A few suggestions: at the institutional and disciplinary level, we need to make technology indispensable to the field's mastery and our understanding of whiteness; at the rhetorical level, we need to interrogate the assumptions of "the posthuman," as it continues the white, Western tendency to universalize its own concepts; at the transnational level, we need to engage critiques of specifically Western ideals of technology and rationalism, as in the works of Ashis Nandy and Francisco Varela. Andy Clark may be right when he defines the human organism as "tools all the way down," but we are also "creolized" all the way up.[66]

In providing intellectual leadership, the first step is simple: return to the fusion of the terms "social" and "progress," and uncouple "technological progress." In the vernacular, the phrase "technological innovation" always connotes linear progress (i.e., new technologies = beneficial social change). To return to "social progress" as a criteria for judging humankind would place Western technology within a global eco-culture whose disastrous contemporary state is due at least in part to the "white" legacies of colonialism, capitalism, and technology, often in service to the Enlightenment ideal of the liberal human subject ("the human").

I reaffirm my true thesis: the *post*human is an escape from the *pan*human. I define the latter here as an emergent global identity invested in a creolized self-concept and, by extension, a creolized world history. It is admittedly a utopian concept, but I contend there can be no global (i.e., post-*Western*) definition of "the human" without it.

Notes

1. Robert Fisk, "Terror in America," *The Nation*, October 1, 2001, online edition.
2. Marita Sturken and Douglas Thomas, "Introduction: Technological Visions and the Rhetoric of the New," in *Technological Visions: The Hopes and Fears That Shape New Technologies*, ed. Marita Sturken, Douglas Thomas, and Sandra J. Ball-Rokeach (Philadelphia: Temple University Press, 2004), 6.
3. In Richard Dyer's *White* (New York: Routledge, 1997), 16–18, Dyer defines white culture within a matrix of capitalism, colonialism, and Christianity, to which I am adding technology. James W. Carey, *Communication as Culture* (Boston: Unwin Hyman, 1988), 114.
4. Lewis Mumford, *Technics and Civilization* (1934; New York: Harcourt, Brace, Jovanovich, 1963), 45, 53, 365, and *The Culture of Cities* (New York: Harcourt, Brace, 1938), 442; David F. Noble, *The Religion of Technology* (New York: Knopf, 1997); T. J. Jackson Lears, *Fables of Abundance* (New York: Basic, 1994); Siva Vaidhyanathan, *The Anarchist in the Library* (New York: Basic, 2004), xii; Thomas

P. Hughes, "Afterword," in *The Technological Fix*, ed. Lisa Rosner (New York: Routledge, 2004), 241; Edward Wenk Jr., *Tradeoffs: Imperatives of Choice in a High-Tech World* (Baltimore: John Hopkins University Press, 1986), 6.

5. This outline of the "GNR" acronym is from Ray Kurzweil, "Promise and Peril," in *Living with the Genie: Essays on Technology and the Quest for Human Mastery*, eds. Alan Lightman, Daniel Sarewitz and Christina Desser (Washington, D.C.: Island Press, 2003), 39; N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press, 1999), 35; Joel Garreau uses the "GRIN" acronym in *Radical Evolution* (New York: Doubleday, 2005), 4–5, and passim.

6. William J. Mitchell, *Me++: The Cyborg Self and the Networked City* (Cambridge, Mass.: MIT Press, 2003), 7, 34, 82, and passim; Rodney A. Brooks, *Flesh and Machines: How Robots Will Change Us* (New York: Vintage, 2002), 212.

7. Langdon Winner, *Autonomous Technology* (Cambridge, Mass.: MIT Press, 1977).

8. Carroll Pursell, *White Heat: People and Technology* (Berkeley: University of California Press, 1994), 215.

9. Michael Adas, *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance* (Ithaca, N.Y.: Cornell University Press, 1989), 144.

10. Sturken and Thomas, "Introduction," 3; John Kasson, *Civilizing the Machine* (New York: Grossman, 1976); David E. Nye, *American Technological Sublime* (Cambridge, Mass.: MIT Press, 1994), and *Narratives and Spaces: Technology and the Construction of American Culture* (New York: Columbia University Press, 1997). Other works by these authors are discussed in depth below.

11. Laurence Coupe, *Myth* (New York: Routledge, 1997), 196–97.

12. John M. Staudenmaier, "Rationality versus Contingency in the History of Technology," in *Does Technology Drive History?: The Dilemma of Technological Determinism*, eds. Merritt Roe Smith and Leo Marx (Cambridge: MIT Press, 1994), 262–63; Carl Becker, *Progress and Power* (Stanford, Calif.: Stanford University Press, 1935), 1–4; Becker's work was preceded by historian J. B. Bury, *The Idea of Progress: An Inquiry into Its Origin and Growth* (London: Macmillan, 1920). Leo Marx, "The Idea of Technology and Postmodern Pessimism," in *Does Technology Drive History?*, 249–50.

13. John Dewey, "Progress," in *Characters and Events*, ed. Joseph Ratner (New York: Henry Holt, 1929), 820–21; Dewey, *Reconstruction in Philosophy* (New York: Henry Holt, 1920), 42; Dewey, "Time and Individuality," in *The Essential Dewey*, eds. Larry A. Hickman and Thomas M. Alexander (Bloomington: Indiana University Press, 1988), 218.

14. Michael L. Smith, "Recourse of Empire: Landscapes of Progress in Technological America," in *Does Technology Drive History?*, 38.

15. Bellamy is quoted in Noble, *The Religion of Technology*, 100; Staudenmaier, "Rationality versus Contingency," 265–66.

16. Vivian Sobchack, "Science Fiction Film and the Technological Imagination," in *Technological Visions*, 157.

17. See, for example, Sherry Turkle, *The Second Self: Computers and the Human Spirit* (New York: Simon and Schuster, 1984), and *Life on the Screen: Identity in the Age of the Internet* (New York: Simon and Schuster 1995); Donna Haraway, *Primate Visions* (New York: Routledge, 1989), and *Feminism and Technoscience* (New York: Routledge, 1997); Daniel Dennett, *Brainchildren: Essays on Designing Minds* (Cambridge, Mass: MIT Press, 1998), and *Consciousness Explained* (Boston: Little, Brown, 1991); Francisco J. Varela, Evan Thompson, and Eleanor Rosch, *The Embodied Mind: Cognitive Science and Human Experience* (Cambridge, Mass.: MIT Press, 1993); Hans P. Moravec, *Mind Children: The Future of Robot and Human Intelligence* (Cambridge, Mass.: Harvard University Press, 1988), and *Robot: Mere Machine to Transcendent Mind* (New York: Oxford, 1999); Ray Kurzweil, *The Age of Spiritual Machines: When Computers Exceed Human Intelligence* (New York: Viking, 1999), and *The Singularity Is Near: When Humans Transcend Biology* (New York: Viking, 2005).

18. Garreau, *Radical Evolution*, 9, 11; Sturken et al., *Technological Visions*, 1.

19. Leo Marx, *The Machine in the Garden* (New York: Oxford University Press, 1964), 195–207; see also Carey, *Communication as Culture*, 120–23.

20. Noble, *The Religion of Technology*, 6, 10–11, 40, 45–46; R. W. B. Lewis, *The American Adam: Innocence, Tragedy, and Tradition in the Nineteenth Century* (Chicago: University of Chicago Press, 1955), 5, 32–41, 45.

21. Noble, *The Religion of Technology*, 14–20; Lewis Mumford, *Technics and Human Development* (New York: Harcourt, Brace, Jovanovich, 1967), 263–72.

22. Noble, *The Religion of Technology*, 24; Lewis Mumford, *The Pentagon of Power* (New York: Harcourt, Brace, Jovanovich, 1970), 105–29.

23. Quotes are in Noble, *The Religion of Technology*, 31–32, 38; on Columbus's voyages as religious missions, see also Kirkpatrick Sale, *The Conquest of Paradise* (New York: Knopf, 1990), 29–30, 93–97.

24. Mumford, *Technics and Civilization*, 45, 53, 365; a good translation of *Man, a Machine* can be found online, along with these quotes, at http://cscs.umich.edu/~crshalizi/LaMettrie/Machine (accessed June 1, 2006); Marx, *Machine in the Garden*, 202; for the body-as-machine, see Anson Rabinbach, *The Human Motor* (Berkeley: University of California Press, 1992).

25. David E. Nye, *America as Second Creation: Technology and Narratives of New Beginnings* (Cambridge, Mass: MIT Press, 2003), 1, 10, 12–13, 290–93, and passim; Martin Heidegger, *The Question of Technology and Other Essays* (New York: Harper & Row, 1977); 17–25.

26. Nye, *America as Second Creation*, 284.

27. Franco Moretti, *Modern Epic: The World-System from Goethe to Garcia Marquez* (London: Verso, 1997), 244; Leo Marx, *The Machine in the Garden* (New York: Oxford, 1964), 195–97.

28. Carey, *Communication as Culture*, 113–15, 191; emphasis in original. See also 173–200, inclusive.

29. This discussion of NASA and the quotes are taken from Noble, *Religion of Technology*, 114, 129–40.

30. Noble, *Religion of Technology*, 137–40.

31. Norman Mailer, *Of a Fire on the Moon* (Boston: Little Brown, 1969), 182; Mitchell, *Me++*, 23.

32. Sobchack, "Science Fiction Film," 148. The first space shuttle, designed in 1976 as a test vehicle only, was slated to be called *Constitution*, in honor of the bicentennial. According to the NASA Web site, "viewers of . . . *Star Trek* started a write-in campaign urging the White House to select the name *Enterprise*"; http://science.ksc.nasa.gov/shuttle/resources/orbiters/enterprise.html (accessed June 1, 2006).

33. Rosalind Williams, "The Political and Feminist Dimensions of Technological Determinism," in *Does Technology Drive History?*, 222.

34. Lori B. Andrews, "Changing Conceptions," in *Living with the Genie*, 107–8.

35. On StelArc, see Andy Clark, *Natural-Born Cyborgs* (New York: Oxford University Press, 2003), 115–19; and Kevin Warwick, *I, Cyborg* (Urbana: University of Illinois Press, 2004), 265; for StelArc's declaration of posthuman principles, see his Web site, http://www.stelarc.va.com.au/index2.html (accessed June 1, 2006).

36. Warwick, *I, Cyborg*, 175–76.

37. Ibid., 175–76, 282–83.

38. Brooks, *Flesh and Machines*, 216.

39. Ibid., 228; Garreau, *Radical Evolution*, 6.

40. Kurzweil, "Promise and Peril," 50; http://www.foresight.org/Nanomedicine/NanoMedFAQ.html#FAQ19 (accessed June 1, 2006).

41. Peter Cochrane is quoted in Warwick, *I, Cyborg*, 73.

42. Albert Borgmann, "On the Blessings of Calamity and the Burdens of Good Fortune," *The Hedgehog Review* 4.3 (Spring 2002): 12–13.

43. Hayles, *How We Became Posthuman*, 64; emphasis in original.

44. John R. Searle, *The Mystery of Consciousness* (New York: New York Review of Books, 1997), 192–93; Varela, Thompson, and Rosch, *The Embodied Mind*, xv, 52.

45. Clark, *Natural-Born Cyborgs*, 136–37; Brian Cooney, *Posthumanity: Thinking Philosophically About the Future* (Lanham, Md.: Rowman & Littlefield, 2004), xix; Hayles, *How We Became Posthuman*, 109.

46. Clark, *Natural-Born Cyborgs*, 131, 135 (emphasis in original); Cooney, *Posthumanity*, 43; for the cultural lag that will accompany "social acceptability," see, for example, Brooks, *Flesh and Machines*, 229–30.

47. Clark, *Natural-Born Cyborgs*, 4, 11.

48. Warwick, *I, Cyborg*, 89, 157, 308; Brooks, *Flesh and Machines*, 212; Clark, *Natural-Born Cyborgs*, 132; Kurzweil is quoted in Garreau, *Radical Evolution*, 105, and Garreau, 6–8; Turkle is quoted in Cooney, *Posthumanity*, xix.

49. Langdon Winner, "Are Humans Obsolete?" *The Hedgehog Review* 4.3 (Fall 2002): 41–42.

50. Gilbert Meilaender, "Genes as Resources," *The Hedgehog Review* 4.3 (Fall 2002): 73.
51. Brooks, *Flesh and Machines*, 229–30.
52. Marx, "Postmodern Pessimism," 238; see also Bill Joy, "Why the Future Doesn't Need Us," in *Society, Ethics, and Technology* (New York: Wadsworth, 2002), eds. Morton Winston and Ralph Edelbach, 231–48.
53. Searle, *The Mystery of Consciousness*, 190–92; Cooney, *Posthumanity*, xxii, 5–6, 87–88.
54. Brooks, *Flesh and Machines*, 206.
55. Cooney, *Posthumanity*, ix–xx.
56. Bill Joy is quoted in Cooney, *Posthumanity*, 155; and Cooney, *Posthumanity*, xxiv.
57. Such sci-fi myths have substantial influence on national politics. "The Terminator," now "The Governator," was elected without any political experience on the grounds of technological fantasy. Then there's the $100 billion spent over twenty years on the Strategic Defense Initiative/"Star Wars" program. Now called the Ballistic Missile Defense Organization, it has never shown the remotest potential for success.
58. Richard Slotkin, *Regeneration through Violence* (Middletown, Conn.: Wesleyan University Press, 1973), and *Gunfighter Nation* (New York: Atheneum, 1992).
59. Sturken and Thomas, "Introduction," 3.
60. Donna Haraway, "The Actors Are Cyborg, Nature Is Coyote, and the Geography Is Elsewhere: Postscript to 'Cyborgs at Large,'" in *Technoculture*, eds. Constance Penley and Andrew Ross (Minneapolis: University of Minnesota Press, 1991), 16, 21, 25.
61. Nye, *America as Second Creation*, 293.
62. James W. Perkinson, *White Theology: Outing Supremacy in Modernity* (New York: Palgrave Macmillan, 2004), 70, 189.
63. Joel Dinerstein, *Swinging the Machine: Modernity, Technology, and African-American Culture Between the World Wars* (Amherst: University of Massachusetts Press, 2003), 22–24, 312–14, and passim.
64. Kurzweil, "Promise and Peril," 62 (my emphasis); Mike Davis, *Planet of Slums* (London: Verso, 2006).
65. Becker, *Progress and Power*, 7; Paul Tillich, *The Spiritual Situation in Our Technical Society*, ed. J. Mark Thomas (Macon, Ga.: Mercer University Press, 1988), 190–91; McKibben is quoted in Cooney, *Posthumanity*, xx.
66. Ashis Nandy, *Alternative Sciences: Creativity and Authenticity in Two Indian Scientists* (Oxford: Oxford University Press, 1995); Ashis Nandy, ed., *Science, Hegemony and Violence: A Requiem for Modernity* (New York: Oxford University Press, 1990).