The techies' wet-dreams

Ted Kaczynski

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There is a current of thought that appears to be carrying many technophiles out of the realm of science and into that of science fiction.[1] For convenience, let's refer to those who ride this current as "the techies."[2] The current runs through several channels; not all techies think alike. What they have in common is that they take highly speculative ideas about the future of technology as near certainties, and on that basis predict the arrival within the next few decades of a kind of technological utopia. Some of the techies' fantasies are astonishingly grandiose. For example, Ray Kurzweil believes that "[w]ithin a matter of centuries, human intelligence will have re-engineered and saturated all the matter in the universe."[3] The writing of Kevin Kelly, another techie, is often so vague as to border on the meaningless, but he seems to say much the same thing that Kurzweil does about human conquest of the universe: "The universe is mostly empty because it is waiting to be filled with the products of life and the technium..."[4] "The technium" is Kelly's name for the technological world-system that humans have created here on Earth.[5]

Most versions of the technological utopia include immortality (at least for techies) among their other marvels. The immortality to which the techies believe themselves destined is conceived in any one of three forms:

i. the indefinite preservation of the living human body as it exists today;[6]

ii. the merging of humans with machines and the indefinite survival of the resulting man-machine hybrids;[7]

iii. the "uploading" of minds from human brains into robots or computers, after which the uploaded minds are to live forever within the machines.[8]

Of course, if the technological world-system is going to collapse in the not-too-distant future, as we've argued it must, then no one is going to achieve immortality in any form. But even assuming that we're wrong and that the technological world-system will survive indefinitely, the techies' dream of an unlimited life-span is still illusory. We

[1] It is significant that Ray Kurzweil, the best-known of the techie prophets, started out as a science-fiction enthusiast. Kurzweil, p. 1. Kim Eric Drexler, the prophet of nanotechnology, started out "specializing in theories of space travel and space colonization." Keiper, p. 20.

[2] The techies of course include the transhumanists, but some techies—as we use the term—do not appear to be transhumanists.

[3] Grossman, p. 49, col. 2. Kurzweil, pp. 351–368.

[4] Kelly, p. 357.

[5] Ibid., pp. 11–12.

[6] Grossman, p. 47. Kurzweil, p. 320.

[7] Grossman, p. 44, col. 3. Kurzweil, pp. 194–95, 309, 377. Vance, p. 1, col. 3; p. 6, col. 1.

[8] Grossman, p. 44, col. 3; p. 48, col. 1; p. 49, col. 1. Kurzweil, pp. 198–203, 325–26, 377. The techies—or more specifically the transhumanists—seem to assume that their own consciousness will survive the uploading process. On that subject Kurzweil is somewhat equivocal, but in the end seems to assume that his consciousness will survive if his brain is replaced with nonbiological components not all at once, but bit by bit over a period of time. Kurzweil, pp. 383–86.

need not doubt that it will be technically feasible in the future to keep a human body, or a man-machine hybrid, alive indefinitely. It is seriously to be doubted that it will ever be feasible to "upload" a human brain into electronic form with sufficient accuracy so that the uploaded entity can reasonably be regarded as a functioning duplicate of the original brain. Nevertheless, we will assume in what follows that each of the solutions (i), (ii), and (iii) will become technically feasible at some time within the next several decades.

It is an index of the techies' self-deception that they habitually assume that anything they consider desirable will actually be done when it becomes technically feasible. Of course, there are lots of wonderful things that already are and for a long time have been technically feasible, but don't get done. Intelligent people have said again and again: "How easily men could make things much better than they are—if they only all tried together!"[9] But people never do "all try together," because the principle of natural selection guarantees that self-propagating systems will act mainly for their own survival and propagation in competition with other self-propagating systems, and will not sacrifice competitive advantages for the achievement of philanthropic goals.[10]

Because immortality, as the techies conceive it, will be technically feasible, the techies take it for granted that some system to which they belong can and will keep them alive indefinitely, or provide them with what they need to keep themselves alive. Today it would no doubt be technically feasible to provide everyone in the world with everything that he or she needs in the way of food, clothing, shelter, protection from violence, and what by present standards is considered adequate medical care—if only all of the world's more important self-propagating systems would devote themselves unreservedly to that task. But that never happens, because the self-propagating systems are occupied primarily with the endless struggle for power and therefore act philanthropically only when it is to their advantage to do so. That's why billions of people in the world today suffer from malnutrition, or are exposed to violence, or lack what is considered adequate medical care.

In view of all this, it is patently absurd to suppose that the technological world-system is ever going to provide seven billion human beings with everything they need to stay alive indefinitely. If the projected immortality were possible at all, it could only be for some tiny subset of the seven billionan elite minority. Some techies acknowledge

[9] Winston Churchill, Sept. 15, 1909, quoted by Jenkins, p. 212. Other examples: "... liberty, toleration, equality of opportunity, socialism... there is no reason why any of them should not be fully realised, in a society or in the world, if it were the united purpose of a society or of the world to realise it." Bury, p. 1 (originally published in 1920; see ibid., p. xvi). On July 22, 1944, John Maynard Keynes noted that forty-four nations had been learning to "work together." He added: "If we can so continue... [t]he brotherhood of man will have become more than a phrase." (Fat chance!) Skidelsky, p. 355.

[10] This of course does not mean that no self-prop system ever does anything beneficent that is contrary to its own interest, but the occasional exceptions are relatively insignificant. Bear in mind that many apparently beneficent actions are actually to the advantage of the self-prop system that carries them out.

this.[11] One has to suspect that a great many more recognize it but refrain from acknowledging it openly, for it is obviously imprudent to tell the public that immortality will be for an elite minority only and that ordinary people will be left out.

The techies of course assume that they themselves will be included in the elite minority that supposedly will be kept alive indefinitely. What they find convenient to overlook is that self-propagating systems, in the long run, will take care of human beings—even members of the elite—only to the extent that it is to the systems' advantage to take care of them. When they are no longer useful to the dominant self-propagating systems, humans—elite or not—will be eliminated. In order to survive, humans not only will have to be useful; they will have to be more useful in relation to the cost of maintaining them-in other words, they will have to provide a better cost-versus-benefit balance than any non-human substitutes. This is a tall order, for humans are far more costly to maintain than machines are.[12]

It will be answered that many self-propagating systems—governments, corporations, labor unions, etc.—do take care of numerous individuals who are utterly useless to them: old people, people with severe mental or physical disabilities, even criminals serving life sentences. But this is only because the systems in question still need the services of the majority of people in order to function. Humans have been endowed by evolution with feelings of compassion, because hunting-and-gathering bands thrive best when their members show consideration for one another and help one another.[13] As long as self-propagating systems still need people, it would be to the systems' disadvantage to offend the compassionate feelings of the useful majority through ruthless treatment of the useless minority. More important than compassion, however, is the self-interest of human individuals: People would bitterly resent any system to which they belonged if they believed that when they grew old, or if they became disabled, they would be thrown on the trash-heap.

But when all people have become useless, self-propagating systems will find no advantage in taking care of anyone. The techies themselves insist that machines will soon surpass humans in intelligence.[14] When that happens, people will be superfluous

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[11] Grossman, p. 48, col. 3 ("Who decides who gets to be immortal?"). Vance, p. 6, col. 1.

[12] Humans need to be fed, clothed, housed, educated, entertained, disciplined, and provided with medical care. Whereas machines can work continuously with only occasional down-time for repairs, humans need to spend a great deal of time sleeping and resting.

[13] Also, modern societies find it advantageous to encourage people's compassionate feelings through propaganda. See Kaczynski, "The System's Neatest Trick," Part 4.

[14] Grossman, pp. 44–46. Kurzweil, pp. 135ff and passim. Machines that surpass humans in intelligence might not be digital computers as we know them today. They might have to depend on quantum-theoretic phenomena, or they might have to make use of complex molecules as biological systems do. Grossman, p. 48, col. 2; Kurzweil, pp. 111–122; USA Today, March 8, 2017, p. 5B (IBM & other companies are working to develop computers that make use of quantum-theoretic phenomena). This writer has little doubt that, with commitment of sufficient resources over a sufficient period of time, it would be technically feasible to develop artificial devices having general intelligence that surpasses that of humans ("strong artificial intelligence," or "strong AI," Kurzweil, p. 260). See Kaczynski, Letter to

and natural selection will favor systems that eliminate them-if not abruptly, then in a series of stages so that the risk of rebellion will be minimized.

Even though the technological world-system still needs large numbers of people for the present, there are now more superfluous humans than there have been in the past because technology has replaced people in many jobs and is making inroads even into occupations formerly thought to require human intelligence.[15] Consequently, under the pressure of economic competition, the world's dominant self-propagating systems are already allowing a certain degree of callousness to creep into their treatment of superfluous individuals. In the United States and Europe, pensions and other benefits for retired, disabled, unemployed, and other unproductive persons are being substan-

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David Skrbina: April 5, 2005, first two paragraphs. Whether it would be technically feasible to develop strong AI as soon as Kurzweil, p. 262, predicts is another matter. Moreover, it is seriously to be doubted whether the world's leading self-prop systems will ever have any need for strong AI. If they don't, then there's no reason to assume that they will commit to it sufficient resources for its development. See Somers, pp. 93–94. Contra: The Atlantic, July/Aug. 2013, pp. 40–41; The Week, Nov. 4, 2011, p. 18. However, the assumption that strong AI will soon appear plays an important role in Kurzweil's vision of the future, so we could accept that assumption and proceed to debunk Kurzweil's vision by reductio ad absurdum. But the argument of Part V of this chapter does not require the assumption that strong AI will ever exist.

[15] E.g.: The Week, Sept. 30, 2011, p. 14 ("Capitalism is killing the middle class"); Feb. 17, 2012, p. 42 ("No reason to favor manufacturing"); April 6, 2012, p. 11; May 4, 2012, p. 39 ("The half-life of software engineers"); Jan. 29, 2016, p. 32. USA Today, July 9, 2010, pp. 1B–2B (machines as stock-market traders); April 24, 2012, p. 3A (computer scoring of essays); Sept. 14, 2012, p. 4F; May 20, 2014, pp. 1A–2A; July 28, 2014, p. 6A; Oct. 29, 2014, pp. 1A, 9A; Feb. 11, 2015, p. 3B; Dec. 22, 2015, p. 1B; Feb. 21, 2017, p. 3B. The Economist, Sept. 10, 2011, p. 11 and "Special report: The future of jobs"; Nov. 19, 2011, p. 84. The Atlantic, June 2013, pp. 18–20. Wall Street Journal, June 13, 2013, p. B6. Davidson, pp. 60–70. Carr, pp. 78–80. Foroohar, "What Happened to Upward Mobility?," pp. 29–30, 34. Markoff, "Skilled Work Without the Worker," pp. A1, A19. Lohr, p. B3. Rotman (entire article). Robots can even perform functions formerly thought to require a "human touch," e.g., they can serve as companions with which people connect emotionally just as they connect with other people. Popular Science, June 2013, p. 28. The Atlantic, Jan./Feb. 2016, p. 31; March 2017, p. 29.

tially reduced;[16] at least in the U. S., poverty is increasing;[17] and these facts may well indicate the general trend of the future, though there will doubtless be ups and downs.

It's important to understand that in order to make people superfluous, machines will not have to surpass them in general intelligence but only in certain specialized kinds of intelligence. For example, the machines will not have to create or understand art, music, or literature, they will not need the ability to carry on an intelligent, non-technical conversation (the "Turing test"[18]), they will not have to exercise tact or understand human nature, because these skills will have no application if humans are to be eliminated anyway. To make humans superfluous, the machines will only need to outperform them in making the technical decisions that have to be made for the purpose of promoting the short-term survival and propagation of the dominant self-propagating systems. So, even without going as far as the techies themselves do in assuming intelligence on the part of future machines, we still have to conclude that humans will become obsolete. Immortality in the form (i)—the indefinite preservation of the human body as it exits today—is highly improbable.

The techies of course will argue that even if the human body and brain as we know them become obsolete, immortality in the form (ii) can still be achieved: Man-machine hybrids will permanently retain their usefulness, because by linking themselves with

[16] E.g.: USA Today, July 20, 2011, p. 3A ("Painful plan in R.I."); Sept. 29, 2011, pp. 1A, 4A; Oct. 24, 2011, p. 1A; Sept. 14, 2012, p. 5A (Spain); Sept. 24, 2012, p. 6B (several European countries); Sept. 28, 2012, p. 5B (Spain); Aug. 5, 2013, p. 3A; Oct. 16–18, 2015, p. 1A; April 26, 2017, pp. 1A–2A. The Economist, June 11, 2011, p. 58 (Sweden). The Week, April 6, 2012, p. 14 (Greece, Spain); July 29, 2011, p. 12 ("The end of the age of entitlements"). Drehle, p. 32. Sharkey, pp. 36–38. A friend of the author wrote on Oct. 3, 2012: "[My parents] don't have any set up for long term care... and at this point many states... are doing what is called estate recovery and the like, which means that if Dad were to go in a nursing home... either his Veteran's stipend, social security, and pension would all go into paying for the care, meaning Mom would not have enough to live on... or, in a different scenario, Medicaid would put a lien on their house and when he dies, mom would be out of luck so Medicaid could be repaid for his 'care'—which at that low level is very poor care, by selling the house." In regard to probable future treatment of people who seek immortality: "The frozen head of baseball legend Ted Williams has not been treated well... . [A]t one point Williams's head, which the slugger ordered frozen in hopes of one day being brought back to life, was propped up by an empty tuna-fish can and became stuck to it. To detach the can... staff whacked it repeatedly with a monkey wrench, sending 'tiny pieces of frozen head' flying around the room." The Week, Oct. 16, 2009, p. 14.

[17] E.g.: USA Today, Sept. 29, 2011, pp. 1A–2A; Sept. 12, 2016, p. 3A. The Week, Sept. 30, 2011, p. 21 ("Poverty: Decades of progress, slipping away"); July 27, 2012, p. 16 ("Why the poor are getting poorer"). Kiviat, pp. 35–37. Also: "Half of all U.S. workers earned less than $26,364 in 2010—the lowest median wage since 1999, adjusted for inflation." The Week, Nov. 4, 2011, p. 18. "The average American family's net worth dropped almost 40 percent... between 2007 and 2010." Ibid., June 22, 2012, p. 34. USA Today, Sept. 14, 2016, p. 1A, reports: "Household incomes see first big gain since 2007." This no doubt reflects the current (up to Jan. 2018) high point in the economic cycle. As the economic cycle approaches the next low point, incomes likely will decline again.

[18] NEB (2003), Vol. 12, "Turing test," p. 56. NEB is more accurate on the Turing test than is Kurzweil, p. 294: In order to pass the test, machines may not have to "emulate the flexibility, subtlety, and suppleness of human intelligence." See, e.g., The Week, Nov. 4, 2011, p. 18.

ever-more-powerful machines human beings (or what is left of them) will be able to remain competitive with pure machines.[19]

But man-machine hybrids will retain a biological component derived from human beings only as long as the human-derived biological component remains useful. When purely artificial components become available that provide a better cost-versus-benefit balance than human-derived biological components do, the latter will be discarded and the man-machine hybrids will lose their human aspect to become wholly artificial.[20] Even if the human-derived biological components are retained they will be purged, step by step, of the human qualities that detract from their usefulness. The self-propagating systems to which the man-machine hybrids belong will have no need for such human weaknesses as love, compassion, ethical feelings, esthetic appreciation, or desire for freedom. Human emotions in general will get in the way of the self-propagating systems' utilization of the man-machine hybrids, so if the latter are to remain competitive they will have to be altered to remove their human emotions and replace these with other motivating forces. In short, even in the unlikely event that some biological remnants of the human race are preserved in the form of man-machine hybrids, these will be transformed into something totally alien to human beings as we know them today.

The same applies to the hypothesized survival of human minds in "uploaded" form inside machines. The uploaded minds will not be tolerated indefinitely unless they remain useful (that is, more useful than any substitutes not derived from human beings), and in order to remain useful they will have to be transformed until they no longer have anything in common with the human minds that exist today.

Some techies may consider this acceptable. But their dream of immortality is illusory nonetheless. Competition for survival among entities derived from human beings (whether man-machine hybrids, purely artificial entities evolved from such hybrids, or human minds uploaded into machines), as well as competition between human-derived entities and those machines or other entities that are not derived from human beings, will lead to the elimination of all but some minute percentage of all the entities involved. This has nothing to do with any specific traits of human beings or of their machines; it is a general principle of evolution through natural selection. Look at biological evolution: Of all the species that have ever existed on Earth, only some tiny percentage have direct descendants that are still alive today.[21] On the basis of this

[19] Grossman, p. 44, col. 3. Vance, p. 6, col. 4. Kurzweil, pp. 24–25, 309, 377. Man-machine hybrids are also called "cyborgs."

[20] Kurzweil, p. 202, seems to agree.

[21] "Species come and go continually—around 99.9 per cent [of] all those that have ever existed are now extinct." Benton, p. ii. We assume this means that 99.9 percent have become extinct without leaving any direct descendants that are alive today. Independently of that assumption, it's clear from the general pattern of evolution that only some minute percentage of all species that have ever existed can have descendants that are alive today. See, e.g., NEB (2003), Vol. 14, "Biosphere," pp. 1154–59; Vol. 19, "Fishes," p. 198, and "Geochronology," especially pp. 750–52, 785, 792, 794–95, 797, 802, 813–14, 819, 820, 825–27, 831–32, 836, 838–39, 848–49, 858–59, 866–67, 872. Extinctions have by no means been limited to a few major "extinction events"; they have occurred continually throughout the evolutionary

principle alone, and even discounting everything else we've said in this chapter, the chances that any given techie will survive indefinitely are minute.

The techies may answer that even if almost all biological species are eliminated eventually, many species survive for thousands or millions of years, so maybe techies too can survive for thousands or millions of years. But when large, rapid changes occur in the environment of biological species, both the rate of appearance of new species and the rate of extinction of existing species are greatly increased.[22] Technological progress constantly accelerates, and techies like Ray Kurzweil insist that it will soon become virtually explosive;[23] consequently, changes come more and more rapidly, everything happens faster and faster, competition among self-propagating systems becomes more and more intense, and as the process gathers speed the losers in the struggle for survival will be eliminated ever more quickly. So, on the basis of the techies' own beliefs about the exponential acceleration of technological development, it's safe to say that the life-expectancies of human-derived entities, such as man-machine hybrids and human minds uploaded into machines, will actually be quite short. The seven-hundred year or thousand-year life-span to which some techies aspire[24] is nothing but a pipe-dream.

Singularity University, which we discussed in Part VI of Chapter One of this book, purportedly was created to help technophiles "guide research" and "shape the advances" so that technology would "improve society." We pointed out that Singularity University served in practice to promote the interests of technology-orientated businessmen, and we expressed doubt that the majority of technophiles fully believed in the drivel about "shaping the advances" to "improve society." It does seem, however, that the techies—the subset of the technophiles that we specified at the beginning of this Part V of the present chapter—are entirely sincere in their belief that organizations like Singularity[25] will help them to "shape the advances" of technology and keep the technological society on the road to a utopian future. A utopian future will have to exclude the competitive processes that would deprive the techies of their thousand-year life-span. But we showed in Chapter One that the development of our society can never be subject to rational control: The techies won't be able to "shape the advances" of technology, guide the course of technological progress, or exclude the intense competition that will eliminate nearly all techies in short order.

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process, though at a rate that has varied widely over time. See Benton, p. ii; NEB (2003), Vol. 18, "Evolution, Theory of," pp. 878–79; NEB (2007), Vol. 17, "Dinosaurs," p. 318.

[22] We don't have explicit authority for this statement, though it receives some support from Sodhi, Brook & Bradshaw, p. 518. We make the statement mainly because it's just common sense and seems generally consistent with the facts of evolution. We're betting that most evolutionary biologists would agree with it, though they might add various reservations and qualifications.

[23] Grossman, pp. 44–46, 49. Vance, p. 6, cols. 3–5. Kurzweil, e.g., pp. 9, 25 ("an hour would result in a century of progress").

[24] Vance, p. 7, col. 1 (700 years). "Mr. Immortality," The Week, Nov. 16, 2007, pp. 52–53 (1,000 years).

[25] Other such organizations are the Foresight Institute, Keiper, p. 29; Kurzweil, pp. 229, 395, 411, 418–19, and the Singularity Institute, Grossman, p. 48, col. 3; Kurzweil, p. 599n45.

In view of everything we've said up to this point, and in view moreover of the fact that the techies' vision of the future is based on pure speculation and is unsupported by evidence,[26] one has to ask how they can believe in that vision. Some techies, e.g. , Kurzweil, do concede a slight degree of uncertainty as to whether their expectations for the future will be realized,[27] but this seems to be no more than a sop that they throw to the skeptics, something they have to concede in order to avoid making themselves too obviously ridiculous in the eyes of rational people. Despite their pro forma admission of uncertainty, it's clear that most techies confidently expect to live for many centuries, if not forever, in a world that will be in some vaguely defined sense a utopia.[28] Thus Kurzweil states flatly: "We will be able to live as long as we want... ."[29] He adds no qualifiers—no "probably," no "if things turn out as expected." His whole book reveals a man intoxicated with a vision of the future in which, as an immortal machine, he will participate in the conquest of the universe. In fact, Kurzweil and other techies are living in a fantasy world.

The techies' belief-system can best be explained as a religious phenomenon,[30] to which we may give the name "Technianity." It's true that Technianity at this point is

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[26] There is of course evidence to support many of the techies' beliefs about particular technological developments, e.g., their belief that the power of computers will increase at an ever-accelerating rate, or that it will some day be technically feasible to keep a human body alive indefinitely. But there is no evidence to support the techies' beliefs about the future of society, e.g., their belief that our society will actually keep some people alive for hundreds of years, or will be motivated to expand over the entire universe.

[27] Grossman, p. 48, col. 3; p. 49, col. 1 ("the future beyond the Singularity is not knowable"). Vance, p. 7, col. 4. See Kurzweil, pp. 420, 424.

[28] "[S]ome people see the future of computing as a kind of heaven." Christian, p. 68. The utopian cast of techie beliefs is reflected in the name of Keiper's journal, The New Atlantis, evidently borrowed from the title of an incomplete sketch of a technological "ideal state" that Francis Bacon wrote in 1623. Bury, pp. 59–60&n1. Probably most techies would deny that they are anticipating a utopia, but that doesn't make their vision less utopian. For example, Kelly, p. 358, writes: "The technium... is not utopia." But on the very next page he launches into a utopian rhapsody: "The technium... expands life's fundamental goodness. ... The technium... expands the mind's fundamental goodness. Technology... will populate the world with all conceivable ways of comprehending the infinite." Etc. Kelly's book as a whole can best be described as a declaration of faith.

[29] Kurzweil, p. 9.

[30] Several observers have noticed the religious quality of the techies' beliefs. Grossman, p. 48, col. 1. Vance, p. 1, col. 4. Markoff, "Ay Robot!," p. 4, col. 2 (columns occupied by advertisements are not counted). Keiper, p. 24. Kurzweil, p. 370, acknowledges the comment of one such observer, then shrugs it off by remarking, "I did not come to my perspective as a result of searching for an alternative to customary faith." But this is irrelevant. St. Paul, according to the biblical account, was not searching for a new faith when he experienced the most famous of all conversions; in fact, he had been energetically persecuting Christians right up to the moment when Jesus allegedly spoke to him. Acts 9: 1–31. Saul = Paul, Acts 13: 9. Certainly many, perhaps the majority, of those who undergo a religious conversion do so not because they have consciously searched for one, but because it has simply come to them.

Like Kurzweil, many techies stand to profit financially from Technianity, but it is entirely possible to hold a religious belief quite sincerely even while one profits from it. See, e.g., The Economist, Oct. 29, 2011, pp. 71–72.

not strictly speaking a religion, because it has not yet developed anything resembling a uniform body of doctrine; the techies' beliefs are widely varied.[31] In this respect Technianity probably resembles the inceptive stages of many other religions.[32] Nevertheless, Technianity already has the earmarks of an apocalyptic and millenarian cult: In most versions it anticipates a cataclysmic event, the Singularity,[33] which is the point at which technological progress is supposed to become so rapid as to resemble an explosion. This is analogous to the Judgment Day[34] of Christian mythology or the Revolution of Marxist mythology. The cataclysmic event is supposed to be followed by the arrival of techno-utopia (analogous to the Kingdom of God or the Worker's Paradise). Technianity has a favored minority—the Elect—consisting of the techies (equivalent to the True Believers of Christianity or the Proletariat of the Marxists[35]). The Elect of Technianity, like that of Christianity, is destined to Eternal Life; though this element is missing from Marxism.[36]

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[31] E.g., Grossman, p. 46, col. 2.

[32] Christianity in its inceptive stages lacked a uniform body of doctrine, and Christian beliefs were widely varied. Freeman, passim, e.g., pp. xiii–xiv, 109–110, 119, 141, 146.

[33] Grossman, pp. 44–46. Kurzweil, p. 9. Another version of the Singularity is the "assembler breakthrough" posited by nanotechnology buffs. Keiper, pp. 23–24.

[34] It's not entirely clear whether the Day of Judgment and the Second Coming of Jesus are supposed to occur at the same time or are to be separated by a thousand years. Compare Relevation 20: 1–7, 12–13 with NEB (2003), Vol. 17, "Doctrines and Dogmas, Religious," p. 406 (referring to "the Second Coming... of Christ... to judge the living and the dead") and ibid., Vol. 7, "Last Judgment," p. 175. But for our purposes this is of little importance.

[35] A correspondent (perhaps under the mistaken impression that the proletariat included all of the "lower" classes) has raised the objection that the proletariat was not a minority. Marxist literature is not consistent as to who belongs to the proletariat. For instance, Lenin in 1899 held that the poor peasants constituted a "rural proletariat." See "The Development of Capitalism in Russia," e.g., Conclusions to Chapter II, section 5; in Christman, p. 19. But in 1917 Lenin clearly implied that the peasantry, including the poor peasants, did not belong to the proletariat, which he now identified as "the armed vanguard of all the exploited, of all the toilers." See "The State and Revolution," Chapt. II, section 1; Chapt. III, sections 1 & 3; respectively pp. 287–88, 299, 307 in Christman. It is the proletariat in this sense—the vanguard of all the toilers—that we have in mind when we speak of the Elect of Marxist mythology, and it's clear from Marxist theory generally that the proletariat in this sense was to consist mainly if not exclusively of industrial workers. E.g., Lenin wrote in 1902: "the strength of the modern [socialist] movement lies in the awakening of the masses (principally the industrial proletariat)..." (emphasis added). "What is to be Done?," Chapt. II, first paragraph; in Christman, pp. 72–73. Stalin, History of the Communist Party, likewise made clear that the proletariat consisted of industrial workers and that these at the time of the 1917 revolution comprised only a minority of the population; e.g., first chapter, Section 2, pp. 18, 22; third chapter, Section 3, pp. 104–05 and Section 6, p. 126; fifth chapter, Section 1, p. 201 and Section 2, p. 211. Almost certainly, industrial workers have never constituted a majority of the population of any large country.

[36] On the subject of apocalyptic and millenarian cults, see NEB (2003), Vol. 1, "apocalyptic literature" and "apocalypticism," p. 482; Vol. 17, "Doctrines and Dogmas, Religious," pp. 402, 406, 408. Also the Bible, Revelation 20.

Historically, millenarian cults have tended to emerge at "times of great social change or crisis."[37] This suggests that the techies' beliefs reflect not a genuine confidence in technology, but rather their own anxieties about the future of the technological society—anxieties from which they try to escape by creating a quasi-religious myth.

[37] NEB (2003), Vol. 8, "millennium," p. 133. See also Vol. 17, "Doctrines and Dogmas, Religious," p. 401 ("Eschatological themes thrive particularly in crisis situations..."). See Freeman, p. 15. For millenarian cults in China, see Ebrey, pp. 71, 73, 190, 240; Mote, pp. 502, 518, 520, 529, 533.

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Anti-Tech Revolution: Why and How, pp. 77 - 83