

"We give you no fixed place to live, no form that is peculiar to you, nor any function that is yours alone. According to your desires and judgment, you will have and possess whatever place to live, whatever form, and whatever functions you yourself choose." That is not from a transhumanist manifesto but God speaking to Adam in Pico della Mirandola's 1486 book, *Oration on the Dignity of Man*, quoted on page 106. See http://www.wsu.edu:8080/~wldciv/world_civ_reader/world_civ_reader_1/pico.html

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though Garreau's footnote has ~wld-civ, instead of ~wldciv. God continues:

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

The Book of Genesis does not cite God saying this. It took until the Southern European Renaissance for it to be made clear that the first humans were the first transhumans. If not then, by the age of Darwin, when man became known as the tool-making animal, it became apparent that he was already using tools to transcend his limitations.

¹ Chapters 1 ("Prologue: The Future of Human Nature"), 2 ("Be All You Can Be"), and 6 ("Prevail") can be reached at the author's site, <http://www.garreau.com/main.cfm?action=book&id=2>, along with many articles by himself and others, plus excerpts from reviews of the book.

Today, we have moved a notch higher, using tools not just to transcend the limitations of the environment but the limitations of our own selves as well. Was it the telegraph, telephone, radio, television that signaled the end of place and its limitations on our connectedness? (Or maybe just the covered wagon.) Does the World-Wide Web and, more so, cell phones signal the end of time, now that we are available 24/7? (Or maybe just the phonograph.) Or was it the first pacemaker for the heart, the first cochlear ear transplant that made us cyborgs, or cybernetic organisms? Or would you say it is psychiatric medications and embryo selection that mark the higher notch?

Joel Garreau, a cultural revolution correspondent for *The Washington Post* and a senior fellow at the School of Public Policy at George Mason University, is the author of *The Nine Nations of North America* (Boston: Houghton Mifflin, 1981) and *Edge City: Life on the New Frontier* (New York: Doubleday, 1991). It is his third book, *Radical Evolution: The Promise and Peril of Enhancing Our Minds, Our Bodies-and What It Means to Be Human*, that is under review here. Garreau says we are on what he calls "The Curve" of exponential increases in everything. Indeed, some are predicting that superhuman intelligence will appear by 2030, at which point (the "Singularity") evolution will no longer be controllable by human agency. Garreau interviewed Ray Kurzweil, the leading advocate of the Singularity, on this and many other topics, but does not himself endorse its likelihood and would not himself welcome it.

The book consists largely of reports and interviews with a few dozen such leading advocates of the use of technology to augment and transform human nature, as well as with those who urge caution. He gives three general scenarios. In the Heaven Scenario, "in the next two generations, humanity is rapidly replaced by something more grand than its motley self". In the Hell Scenario, "humanity reaches a catastrophic end," and in the Prevail Scenario, "the future is not predetermined. It is full of hiccups and reverses and loops, all of which are the product of human beings coming to grips with their own destinies. In this world, our values can and do shape our future..... Heaven and Hell each might make a good summer blockbuster movie, featuring special effects. But they tend toward the same storyline: We are in for revolutionary change; there's not much we can do about it; hang on tight; the end. The Prevail Scenario, if nothing else, has better literary qualities" (p. 12f).

The readers of this journal will be familiar with many, if not most, of the promises and perils of GRIN technologies and most likely will know that GRIN stands for genetics, robotics, information systems, and nanotechnology. Garreau interviews Gregory Stock for the G, Rodney Allen Brooks for the R, Marvin Minsky for the I, and Eric Drexler for the N.

These are the yea-sayers. The chief nay-sayer is Bill Joy, but Garreau also brings in Francis Fukuyama and Bill McKibben, but not enough Leon Kass. He is apparently unaware of John Leslie's *The End of the World: The Science and Ethics of Human Extinction* (London: Routledge, 1996), which shovels in dooms by the carload.

But it is the chief Prevail man, Jaron Lanier, the inventor of virtual reality technology, who offers a vision that is more than just a middle ground between Kurzweil and Joy. For Lanier, what really matters is that these technologies will foster tighter and tighter interconnectedness among humans. He emphasizes human cussedness and our ability to muddle through.

Finally, there is a chapter explicitly about the transhumanists. James Hughes, Nick Bostrom, Felipe Fernández-Armesto, Natasha Vita-Moore, and other enthusiasts make their appearances. Together with doubters like Fukuyama, they discuss what it means to be human.

Radical Evolution is more a collection of interviews than an organized treatise. Accordingly, while there are worthy reflections on the social implications of it all, there is no systematic presentation of the speculations. I'd have liked more on who gets to use these enhancements, what might be in store for us if, say, the sex ratio changes or average intelligence is greatly increased, what will happen to those left behind, what will guarantee "friendly artificial intelligence," and whether robots (and cyborgs, the difference being that cyborgs are humans, but enhanced humans) will be the affectively flat monsters who will exterminate mankind or turn out to have a level of profundity beyond Beethoven.

No one seems to have noticed that evolution is headed beyond the reproduction of one discrete organism after another (corals don't, by the way). Emotions evolved only in sexually reproducing, discrete organisms.

Like sex itself, emotions use up genetic and material resources, and there is no consensus about their biological value. Other than the thrill of doing so (we should! we should!), making robots with desires-and all desires ultimately get back to reproduction-would be unnecessary, since robots don't reproduce. By the time they did, several Moore's Law doublings will already have transpired, making upgrades, as opposed to replacements, pointless. Besides, the action is in linked networks (superorganisms, to stretch the concept), which "evolve" (change) but do not reproduce.

An Alternative to a Transhumanist Future?

So what is the alternative, a non-transhumanist future? It is odd that Francis Fukuyama wrote a book, *The End of History and the Last Man* (New York: Macmillan, 1992), but has forgotten about what that great transhumanist, Friedrich Nietzsche, called the Last Man. The world after the end of history is a dull existence, not without the human drama, so wonderfully anthologized in Leon Kass and the President's Council on Bioethics, *Being Human: Core Readings in the Humanities* (New York: W.W. Norton, 1994), but not advancing either. The second cheapest form of wisdom is that "there is no new thing under the sun" (Ecclesiastes 1:9), and, for one, want more. But the evidence is that we have pretty much reached the limits of our wits, imposed by our three-pound brains. Of the myriad books whose title begins, "The End of," I single out John Horgan's *The End of Science: Facing the Limits of Knowledge in the Twilight of the Scientific Age* (New York: Addison-Wesley, 1996), which is a great collection of interviews with scientists and is not really so gloomy.

I also think of Charles Murray's *Human Accomplishment: The Pursuit of Excellence in the Arts and Sciences, 800 B.C. to 1950* (New York: HarperCollins, 2003), which collates standard reference books in many fields and sees a definite slowdown in major achievements in the century ended in 1950 (Murray argues a continuing decline since then). Murray attributes this to both the erosion of absolutist imperatives (such as those furnished by religion) and the fact that the easy truths have been discovered, leaving us unable to crack such difficult problems as reconciling quantum mechanics and relativity theory, which the best minds on the planet can theorize (string theory) but wind up talking over each others' heads.

Painting, long turned toward a succession of "movements" replete with long-winded manifestos on what they were all about, beginning with the Pre-Raphaelites in 1848, has gotten to the point where paintings now consists of allusions to an eclectic mixture of these "movements." Art shows go in one ear and out the other. In music, there has not been a major composer since Shostakovich died in 1975, and the men are no longer in charge as performers. The best are all women: Marin Alsop, conductor; Hélène Grimaud

and Mitsuko Uchida, piano; Bine Katrine Bryndorf, organ; and Lara St. John, violin. They do have something new to say. But the repertoire continues to be mostly the nineteenth century Romantics.

If the choice is either to risk ending humanity or the nearly certain prospect that man will drone on until the sun boils off the oceans, I favor taking the risk.

"Radical Evolution" is for now the best summary of the various views on our technological future. It joins James Hughes' *Citizen Cyborg: Why Democratic Societies Must Respond to the Redesigned Human of the Future* (Cambridge, MA: Westview Press, 2004), which I reviewed in this journal in April last year: <http://jetpress.org/volume14/forman.html>, as the best discussion of the politics of transhumanism. It joins Bruce Sterling's *Tomorrow Now: Envisioning the Next Fifty Years* (New York: Random House, 2002) as the best forecast of societal changes, and (not noticed by Garreau) Michio Kaku's *Visions: How Science Will Revolutionize the Twenty-First Century* (Oxford UP, 1998), which gives a physicist's view on just what is and is not feasible, as the best scientific perspective.

Infuriatingly, the book has endnotes rather than footnotes, but it has a bibliography, with lots of website links, that is second to none.

I can't help but notice that these books are, unwittingly and inadvertently, Eurocentric to the core. The Kass anthology consists almost entirely of selections from Biblical and Euro-American literature. Both the visionaries and the resisters interviewed by Garreau mostly reside in the West. The technologies are indeed being developed outside the West, but the basic science comes from the West. Garreau notes the declining birth rates in Europe, but he offers no speculation, except at one point where he, or one of those he interviewed, asks whether posthumans developed in China or Japan would be any different than the ones that would emerge from Europe or the United States.

Why Are Snakes Reptiles?

This is not a question that gets asked very often, but the answer could help us decide if posthumans are really humans. Here's the time frame, leading up to snakes²:

² A note: the Mosaic graphics browser, with whose introduction the Internet really took off, is only a decade old. This piece of "transhuman" technology has affected life far more than anything else in the past decade. In the decade ahead, the only at all likely comparably effective innovations are smart pills and the much anticipated Semantic Web. I spent a couple of hours using Google, Wikipedia, and the Encyclopaedia Britannica to find an up-to-date tree of life to give more accurate dates of their evolutionary development. (We now know that mammals emerged much before birds.) But my search for a simple tree (they differ a great deal and are being continually revised) did not succeed. So I hauled out the textbook of my high school biology course (1959-60), which was also the freshman biology book at Harvard, George Gaylord Simpson, et al., *Life: An Introduction to Biology* (New York: Harcourt, Brace and Company, 1957).

A revolutionary textbook in its day, it was the first to use a "principles approach" and place evolution at its center (and, yes, Watson and Crick's double helix discovery of 1954 did make it into the book). My points are philosophical and would not have been affected by revised dates, but I sure do wish the Semantic Web were here!

Paleozoic Era, 500-205 million years ago (mya):

- ? 425-360 mya (Ordovician period): Fish
- ? [360-325 mya (Silurian period): Land plants (just for the record here)]
- ? 325-280 mya (Devonian period): Amphibians
- ? 280-230 mya ((Carboniferous period): Reptiles

Mesozoic Era, 205-75 mya

- ? 165-135 mya (Jurassic period): Mammals and Birds
- ? Cenozoic Era, 75 mya to present
- ? Snakes (somewhere in there)

Mammals and birds are usually given Classes from reptiles, while Snakes are but an Order within the Class of reptiles. However, snakes give live births, unlike birds (and a few mammals). But then again, mammals and birds are warm blooded, at least the ones alive today. You'd have to bone up on the subject to find out how warm-bloodedness is determined from fossils. Recall that there was a huge controversy over whether certain dinosaurs were warm blooded. You'd have to bone up on this subject, too, to see how much consensus has emerged from this controversy. In any event, there might be good reason to pull snakes out of reptiles and place them in a new Class.

Cladistics, at least in one of its versions, is an approach to taxonomy that was invented by Willi Hennig in 1950. It gets around the problem of where to put mammals and birds (and snakes) by regarding a clade as its first representatives together with all of its descendants. Cladistic reptiles, as opposed to Linnaean reptiles, include mammals and birds, along with snakes. The great Swedish biologist, Carl von Linné was, of course, a Creationist, as he died in 1778. He grouped organisms by their properties and not by their evolutionary descent. So if an organism lost some of its defining characteristics, it might get put in an earlier taxon. Linnaean (modern evolutionary ones, that is) or Cladist, biologists agonize over how to classify, to get the evolutionary picture right and decide just which characteristics are essential ones.

What are the essential characteristics of human? Felipe Fernández-Armesto is cited by Garreau as regarding humans as "uniquely rational, intellectual, spiritual, self-aware, creative, conscientious, moral, and godlike" (p. 237). He says this is a myth, but Garreau says "that's the most satisfying description of human nature I've found" (p. 238). On the Linnaean account, if posthumans lose the qualities (how many?), they are not human. On the Cladist account, our posthuman descendants, including both cyborgs and robots, are humans, just as humans are mammals, mammals reptiles, reptiles amphibians, and amphibians fish!

I go with the Cladist, on evolutionary grounds, and fear not that humanity will be destroyed but instead look forward to our human (and reptilian, amphibian, fish) descendants. And I go with Garreau's preference for the Prevail scenario that we have choices about what our children will be.

The final word goes to the greatest transhumanist:

Zarathustra, however, looked at the people and wondered. Then he spake thus: Man is a rope stretched between the animal and the Superman--a rope over an abyss. A dangerous crossing, a dangerous wayfaring, a dangerous looking-back, a dangerous trembling and halting. What is great in man is that he is a bridge and not a goal: what is lovable in man is that he is an OVER-GOING and a DOWN-GOING. I love those that know not how to live except as down-goers, for they are the over-goers. I love the great despisers, because they are the great adorers, and arrows of longing for the other shore. I love those who do not first seek a reason beyond the stars for going down and being sacrifices, but sacrifice themselves to the earth, that the earth of the Superman may hereafter arrive. I love him who liveth in order to know, and seeketh to know in order that the Superman may hereafter live. Thus seeketh he his own down-going. I love him who laboreth and inventeth, that he may build the house for the Superman, and prepare for him earth, animal, and plant: for thus seeketh he his own down-going. I love him who loveth his virtue: for virtue is the will to down-going, and an arrow of longing. I love him who reserveth no share of spirit for himself, but wanteth to be wholly the spirit of his virtue: thus walketh he as spirit over the bridge. I love him who maketh his virtue his inclination and destiny: thus, for the sake of his virtue, he is willing to live on, or live no more. I love him who desireth not too many virtues. One virtue is more of a virtue than two, because it is more of a knot for one's destiny to cling to. I love him whose soul is lavish, who wanteth no thanks and doth not give back: for he always bestoweth, and desireth not to keep for himself. I love him who is ashamed when the dice fall in his favour, and who then asketh: "Am I a dishonest player?"--for he is willing to succumb. I love him who scattereth golden words in advance of his deeds, and always doeth more than he promiseth: for he seeketh his own down-going. I love him who justifieth the future ones, and redeemeth the past ones: for he is willing to succumb through the present ones. I love him who chasteneth his God, because he loveth his God: for he must succumb through the wrath of his God. I love him whose soul is deep even in the wounding, and may succumb through a small matter: thus goeth he willingly over the bridge. I love him whose soul is so overfull that he forgetteth himself, and all things are in him: thus all things become his down-going. I love him who is of a free spirit and a free heart: thus is his head only the bowels of his heart; his heart, however, causeth his down-going. I love all who are like heavy drops falling one by one out of the dark cloud that lowereth over man: they herald the coming of the lightning, and succumb as heralds. Lo, I am a herald of the lightning, and a heavy drop out of the cloud: the lightning, however, is the SUPERMAN.--

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