Flesh and Machines: How Robots Will Change Us and Our Posthuman Future: Consequences of the Biotechnology Revolution (Book Reviews)

Charles C. Adams
Dordt College

Book Review

Flesh and Machines: How Robots Will Change Us, by Rodney A. Brooks (New York: Pantheon Books, 2002). 260 pages. $26.00. ISBN 0-375-42079-7.
Our Posthuman Future: Consequences of the Biotechnology Revolution, by Francis Fukuyama (New York: Farrar, Straus and Giroux, 2002). 256 pages. $25.00. ISBN 0-374-23643-7.
Reviewed by Charles C. Adams, Dean of Natural Sciences, Dordt College.

> Oh that this too too solid flesh would melt,
> Thaw, and resolve itself into a dew . . .
> -Hamlet, I: 2:131

Hamlet's choice of words betrays both his despair and his age's sense of destiny regarding the human body. Only a being with a bodily "nature" is capable of lamenting the inescapable continuity of experience that such a nature provides. That continuity—that anthropological fixity—stands in sharp contrast to the almost infinite plasticity that increasingly characterizes "human nature" as understood in the present age.

Rodney Brooks is a particularly sophisticated representative of the present age. As Professor of Computer Science and Engineering and Director of the Artificial Intelligence (AI) Laboratory at MIT, and as Chairman and Chief Technological Officer of iRobot Corporation, he is a leader in AI research and a proponent of an anthropology rooted in a commitment to physical reductionism. To a physical reductionist, everything can be reduced to matter and energy and the physical laws that govern the interactions and transformations of matter and energy. Life, feeling, rationality, aesthetic sensitivity, ethics, and even faith are not merely dependent on the physical, they are *reducible to* the physical and thus ultimately explainable in terms of the laws of physics.

In *Flesh and Machines: How Robots Will Change Us*, Brooks maintains that while we are just now heading into the middle of the information revolution, two new revolutions are coming fast upon us. The first is the *robotics* revolution, a natural but distinct development building upon the understanding and technology developed during the information revolution. During this revolutionary period (the early part of the twenty-first century), Brook argues, we will create and develop *relationships with artificial creatures*. This step is possible because we are machines, just like the robots we create:

> Our physiology may be different, but at heart I am saying we are much like the robot Genghis [a robot he describes in his book], although somewhat more complex in quantity but not in quality.
>
> . . . what I am really saying is that we, all of us, overanthropomorphize humans, who are after all mere machines. When our robots improve enough, beyond

their current limitations, and when we humans look at them with the same lack of prejudice that we credit humans, then too we will break our mental barrier, our need, our desire, to retain tribal specialness, differentiating ourselves from them. Such leaps of faith have been necessary to overcome racism and gender discrimination. The same sort of leap will be necessary to overcome our distrust of robots. (174-5)

Brooks spends most of his book developing these ideas regarding robots and humans and his belief that robots will evolve toward the attainment of "genuine emotions and consciousness" (180). It is only at the very beginning and at the closing of the book that he describes the more profound revolution to follow the robotics revolution: the *biotechnology revolution*. The words he chooses to close his last chapter are revealing of the originality, radicality, and faith in human autonomy of his vision:

> We are on a path to changing our genome in profound ways. Not simple improvements toward ideal humans as is often feared. In reality, we will have the power to manipulate our own bodies in the way we currently manipulate the design of machines. We will have the keys to our own existence. There is no need to worry about mere robots taking over from us. We will be taking over from ourselves with manipulatable body plans and capabilities easily able to match that of any robot.
>
> The distinction between us and robots is going to disappear. (236)

But Brooks's vision is not nearly radical enough. He never takes his basic theses to their logical conclusions. Rather, he "cops out" by admitting an irreconcilable dualism in his own thinking. How does one explain norms for ethical living? How does one explain why justice is better than injustice? Brooks doesn't even try:

> When I was younger, I was perplexed by people who were both religious and scientists. I simply could not see how it was possible to keep both sets of beliefs intact. They were inconsistent, and so it seemed to me that scientific objectivity demanded a rejection of religious beliefs. It was only later in life, after I had children, that I realized that I too operated in a dual nature as I went about my business in the world.
>
> On the one hand, I believe myself and my children all to be mere machines. Automatons at large in the uni-

verse. Every person I meet is also a machine—a big bag of skin full of biomolecules interacting according to describable and knowable rules. When I look at my children, I can, when I force myself, understand them in this way. I can see that they are machines interacting with the world.

But that is not how I treat them. I treat them in a very special way, and I interact with them on an entirely different level. They have my unconditional love, the furthest one might be able to get from rational analysis. Like a religious scientist, I maintain two sets of inconsistent beliefs and act on each of them in different circumstances. (174)

Francis Fukuyama is uncomfortable with suspending logic in that way. He is committed to reason. But he is even more committed to the view that without some kind of normative foundation *defining* what it means to be human, ethics, liberal democracy, and all that makes civilization possible dissolve away into a vapor of radical skepticism. In his book, *Our Posthuman Future: Consequences of the Biotechnology Revolution*, Fukuyama argues, "human nature exists, is a meaningful concept, and has provided a stable continuity to our experience as a species. It is, conjointly with religion, what defines our most basic values." (7)

Fukuyama does not write from a Christian perspective, much less a Reformational Christian perspective. His ultimate faith commitment is, like that of Brooks, to human autonomy. But where Brooks's commitment to human autonomy is rooted in the ideal of science—the confidence that we can *know* ourselves and our world by means of logic and natural science (even if we interact with each other on "an entirely different level")—Fukuyama's faith in human autonomy is rooted in the notion of human freedom. Thus, he does not argue against the plasticity of human nature. Rather, he argues for the limitation of that plasticity by norms for human nature. What is most fascinating here is that Fukuyama's concept of "plasticity" is simply a synonym for "freedom." Yet that plasticity—and therefore that freedom—is guaranteed by seemingly transcendent norms (at least transcendent of the physical and the biotic) that place limits on that plasticity. In other words, Fukuyama's view of human freedom is not simplistically absolute. He recognizes that a meaningful concept of human freedom will depend on structural principles that transcend and "limit" that freedom.

Although the idea that norms guarantee human freedom may be attractive to Christians, Fukuyama grounds those norms in human evolution rather than in the Word of a transcendent God. Thus, he returns, like Brooks, to the ideal of science, albeit at a deeper level of philosophical sophistication, and, like Brooks, must ultimately make a leap of faith that is inconsistent with his faith in science. Nonetheless, the issues he raises and the questions he asks will find sympathetic readers in most Christians.

Early in the book he raises concerns regarding neuropharmacology, the treatment of psychological disorders—once the domain of Freudian "talk therapy"—with drugs. Using Prozac and Ritalin as current examples, he argues that we are "androgynizing" our children, giving Prozac to depressed girls and Ritalin to hyperactive boys. But that's just the beginning:

Prozac and Ritalin are only the first generation of psychotropic drugs. In the future, virtually everything that the popular imagination envisions genetic engineering accomplishing is much more likely to be accomplished sooner through neuropharmacology. (52)

Yet this is not Fukuyama's real concern. Drugs, like the "soma" of Huxley's *Brave New World*, may dehumanize individuals. Fukuyama's greater concern is for humankind as a whole:

The next generation may for whatever reason prefer supermasculine boys and hyperfeminine girls. But you can always stop giving drugs to children if you don't like their effects. Genetic engineering, on the other hand, will embed one generation's social preferences in the next. (94)

Fukuyama fears that through genetic engineering we may lose our humanity "as a species":

In a chapter on "Human Dignity," Fukuyama discusses the relationship of "parts" to "wholes" and begins to sound almost Dooyeweerdian with his insistence on the irreducibility of humans to animals and of human characteristics to other, similar, but nonhuman qualities. He argues that the problem lies "in the methodology of reductionism itself for understanding complex systems, and particularly biological ones" (162), and to "confuse human politics with the social behavior of any other species is to mistake parts for wholes" (165).

These concerns come together in the following statement:

Ethologists have noted that many other species communicate with sounds, and that chimpanzees and other animals can learn human language to a limited extent. But no other species has human language—that is, the ability to formulate and communicate abstract principles of action. It is only when these two natural characteristics, human sociability and human language, come together that human politics emerges. (165)

Fukuyama concludes his book by affirming the "precautionary principle," "which asserts in effect that products should be presumed guilty until proven innocent of potentially threatening the environment or public health" (198). He applies this principle to cloning, embryo research, new psychotropic drugs, and other potential areas of biotechnology research and development.

In the end, Fukuyama fails to be completely convincing because his argumentation rests on the same foundation as that of Brooks and others who are more bold and optimistic

in their technicistic views of the future. But Fukuyama raises good arguments, and his failure to convince ought to encourage Christians to become active in developing a Christian philosophy of technology, where insights and understanding might be developed on the firm foundation of the Word of God.

Both Brooks's and Fukuyama's books are well worth reading for Christians who are interested in where our technological efforts may take us in the future. Brooks will be more interesting to computer scientists and engineers. But Fukuyama's book is very well written, and thus will appeal to all those who generally would not wish to see their "too too solid flesh" melt, thaw, and resolve itself into a posthuman dew.

Worldview: The History of a Concept, by David K. Naugle. Grand Rapids, MI: William B. Eerdmans Publishing Company, 2002. xxii + 384 pp. Reviewed by Tim McConnel, Assistant Professor of Theology, Dordt College.

A little over one hundred years ago, Abraham Kuyper delivered his famous Stone lectures on Calvinism at Princeton University. At that time, he introduced his American audience to the notion of two "life systems" being in conflict with one another. In a footnote, he wrote, "As Dr. James Orr . . . observes, the German technical term *Weltanschauung* has no precise equivalent in English. He therefore used the literal translation, *view of the world*, notwithstanding that this phrase in English is limited by associations that connect it predominately with *physical nature*. For this reason, the more explicit phrase *life and world view* seems to be more preferable. My American friends, however, told me that the shorter phrase, *life system*, on the other side of the ocean, is often used in the same sense." In the intervening century, the form "worldview" has filled the previously existing gap, due, in no small measure, to the success of Kuyper and Orr in popularizing among English-speaking Christians what had been a continental European philosophical notion.

I was reminded of the ubiquitous status of the term recently when I saw "worldview" used in the chapter title of a book on biblical criticism. How has a German technical term, arising from the context of nineteenth-century German romanticism, come to play a prominent role in evangelical circles? David K. Naugle helps to answer this question as he undertakes a historical study of the term in his *Worldview: The History of a Concept*, which received *Christianity Today's* 2003 book-of-the-year award in the Theology/Ethics category. His purpose is not to describe or contrast various worldviews but rather to delve into the significance and development of the term itself.

The first part of the book explores the various ways in which the notion of "worldview" has entered into Christian thought, in particular in evangelical, Catholic, and Orthodox circles. In the first group, Naugle details the use of worldview in James Orr, Gordon Clark, Carl F. H. Henry, Abraham Kuyper, Herman Dooyeweerd, and Francis Schaeffer. He gives pride of place to Orr because Orr was the first significant evangelical theologian to give an extended treatment to the notion of a Christian worldview and to argue for its opposition to the zeitgeist of the modern

age. Furthermore, Orr himself influenced Kuyper's development of the concept, as can be seen in the quote above from Kuyper's Lectures on Calvinism. Orr has also had an enduring effect on the American scene through the writings of Clark and Henry, both of whom were influenced by his worldview tradition.

The presence of the Dutch Reformed scholars Kuyper and Dooyeweerd in Naugle's analysis may seem out of place at first glance, inasmuch as this work is explicitly an analysis of the term's development in English-speaking evangelicalism. However, as Naugle notes, they have had a major impact on segments of the English-speaking Christian world through the Dutch immigrant community in North America. In the section on Kuyper, Naugle helpfully points out the connection in Kuyper's thought between the notion of the antithesis and the need to develop a consistent Christian worldview. Naugle notes Dooyeweerd's contribution of the notion of the religious ground motive underlying one's philosophy and worldview, but he suggests that Dooyeweerd over-distinguishes between the religious ground motive and one's worldview: "since Dooyeweerd so closely identifies the ground motive of the Holy Spirit with the themes of creation, fall, and redemption—the essence of the biblical worldview—we cannot help but wonder how much of a distinction can be made between his point of view and Kuyper's" (29). Naugle ends his overview of the role of worldviews in Protestant evangelicalism with Francis A. Schaeffer, who undoubtedly has been the greatest popularizer of the notion in the broader evangelical community during the past half-century. At the end of this chapter, Naugle raises three significant issues: the need for definition, the origin of worldview in the vocabulary of modernity, and the attendant question of the usefulness or problematic status of the term for biblical Christianity. He returns to these important issues at the end of his study.

Naugle next turns to the presence of worldview thinking in contemporary Catholicism and Orthodoxy. While he concedes that neither tradition has made much use of the term "worldview," he points out, nevertheless, that they both exhibit an approach that is similar in terms of seeing