



Remaking Ourselves

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Review of Ramez Naam's *More than Human* (Broadway Books, 2005) and Joel Garreau's *Radical Evolution* (Doubleday, 2005).

If we change our biology, do we change our nature? The increasing sophistication of biomedical technologies make it nearly inevitable that, very soon, we will be able to make startlingly profound changes to our bodies and our minds. But critics of such technological advances claim that such modifications would lead to a world of genetic "haves" and "have-nots," of individuals forced to adopt behavioral or physical changes in order to remain economically competitive, even of the "enhanced" seeing themselves as above the petty concerns of the un-modified populace, and either divorcing themselves from the rest of humanity or seeking political dominance. Such fears gain currency in part because they have been embraced by leading conservative political figures like Francis "End of History" Fukuyama and former head of the President's Council on Bioethics, Leon Kass.

It's against this backdrop that technology specialist Ramez Naam and *Washington Post* staff writer Joel Garreau explore—in substantively different ways—just what possibilities await us in a world of technological enhancement of the human physiology.

Ramez Naam's *More Than Human* is an admittedly partisan account of the potential benefits of biological enhancement. Naam strongly supports the development of these technologies, arguing that the drive to improve oneself is very much an expression of human nature.

As a species we've always looked for ways to be faster, stronger, and smarter and to live longer. Many past enhancements that we now take for granted—from blood transfusions to vaccinations to birth control—were called unnatural or immoral when they were first introduced. Yet over time we've become accustomed to these new levels of control over our minds and bodies, and have used them for the betterment of ourselves, our families and our world.

The enhancements that Naam discusses range from improving our ability to fight disease all the way to radical extensions of the human lifespan, with stops along the way at increased intelligence, altered personalities, and implanted computers. The material is presented in a straightforward, well-documented way, but always with an emphasis on potential benefits. Much of the book covers the kinds of choices parents of the very near future may have to make regarding the kinds of children they bring into the world.

Naam makes it clear from the outset that he sees bio-enhancement as simply an extension of treatments for healing the sick and injured. This tension between "enhancement" and "therapy" is a recurring theme in the literature of both the pro- and anti-modification communities. For critics, the line is very clear between interventions meant to bring the disabled up to the norms of physical health and those meant to exceed natural abilities; for proponents, this line is far fuzzier, as the range of natural human capability is quite broad, and an intervention that brings an individual's physical capacities close to the natural maximum is simply "being all that one can be." And in *More Than Human*, "all that one can be" is pretty amazing: healthier, smarter, longer lived, better connected, more talented, happier... the child of the mid-21st century will be everything a parent could hope for, and more.

Naam acknowledges potential risks and gaps in our knowledge, but by and large sees these as solvable problems. *More Than Human* doesn't pretend to be an unbiased look at the possibility of human enhancement, but a counterpoint to tracts such as Fukuyama's *Our Posthuman Future*. In that, it's quite successful—an open-minded reader will find a clear presentation of the potential benefits arising from human enhancement technologies, and an exciting glimpse at what the next few decades might hold.

In contrast, Joel Garreau's *Radical Evolution* **does** try to present both the supporting and opposing perspectives on these technologies. Garreau, a writer for the *Washington Post* (and author of several previous books on changes to human society, including *Edge Cities* and *The Nine Nations of North America*), focuses less on the nuts & bolts of enhancement technologies than on the stories of the people working on or thinking about them. As a result, *Radical Evolution* is likely an easier introduction to the topic for non-technical readers than is *More Than Human*. (Disclosure: I've known Joel for about a decade, and he consulted with me early in the crafting of this book.)

Radical Evolution is split into two broad sections. The first two chapters tell of the people and organizations working on the technologies intended to improve human lives and enhance human capabilities; Garreau refers to these as the GRIN technologies—Genetic, Robotic, Information and Nano. The remainder of the book is an attempt to craft three very different scenarios of where these technologies could lead. The scenarios ("Heaven," "Hell," and "Prevail") aren't attempts to predict the future, so much as they are attempts to dramatize and illustrate the ends of the spectrum of possibility. This, in turn, is meant to allow readers to decide for themselves which kind of world is the most appealing—because, as Garreau argues, the choice will be ours.

The "Heaven" scenario will be easily recognized by readers familiar with the work of Ray Kurzweil. It's a world where (as a rule) we make the right choices, technology works the way we intend, and the life of the enhanced is so self-evidently better that few choose not to seek out enhancement. As a side-effect, the environment's cleaner, there's no hunger or privation, and we all live (essentially) forever. If that sounds like a caricature, it's not; Kurzweil, and many of his supporters, have worked out very well-reasoned arguments as to why such a future isn't just possible, but close to inevitable.

The "Hell" scenario, conversely, is largely an elaboration of the fears expressed by Bill Joy in recent years. It's a world in which things go badly, very badly, directly as a result of the growing capabilities of the GRIN technologies. Privacy is gone, economies are shattered, the environment is irrevocably damaged, and terrorists can unleash weapons with heretofore unimaginable ability to do civilization harm. In short, it's a technologically-enhanced nightmare. Joy and fellow-travelers such as Fukuyama believe very strongly that this outcome is unavoidable if we don't immediately cease development of these technologies.

Finally, the "Prevail" scenario represents an attempt to describe a world that is *not* pre-determined by our technology choices; instead, we are able to adopt or relinquish given technologies based on thoughtful determination of consequences. Such a world emerges in part because technologies never work quite as well as their proponents hope and their detractors fear, and in part because humans are simply much better at taking stock of their situations and avoiding "inevitable" outcomes than is often thought.

Even if technology is advancing along an exponential curve, that doesn't mean humans cannot creatively shape the impact on human nature and society in largely unpredictable ways. The key measure of Prevail's success is an increasing intensity of links between humans, not transistors. If some sort of transcendence is achieved beyond today's understanding of human nature, it will not be through some individual becoming a superman. [...] Transcendence is social, not solitary.

Much of the focus of the Prevail scenario is on researchers choosing not to pursue certain ends, and society at large deciding to slow the work on potentially-dangerous technologies. Garreau acknowledges but gives less emphasis to the other side of the scenario, that of some technologies being accelerated out of appreciation of their potential benefits.

Readers of *Radical Evolution* not already familiar with the elements of the GRIN technologies will come away from the book with a better appreciation of their potential but a still-fuzzy understanding of what they entail. Ideally, a reader would pause after the first section of *Radical Evolution* and seek out works by other authors explaining the technologies in more detail—Naam's *More Than Human* would work quite well in this role, actually—before continuing on to the scenarios.

Readers who have already given a great deal of thought to the risks, benefits and meaning of human enhancement technologies will find that both books work better as

jumping-off points for argument than as stand-alone volumes. Each contains elements that knowledgeable readers will find debatable, such as Naam's argument that bioengineering to enhance intelligence or talent differs little from tutoring in math or music, or Garreau's underplaying of international competition as a driver for technological development. In general, *More Than Human* underestimates the importance of politics and culture in determining technological choices, while *Radical Evolution* places too much emphasis on the opinions and ideas of older, establishment thinkers such as Kurzweil and Joy—there's no sense of the cutting edge, of truly radical approaches to these issues.

What both books accomplish quite well is to illustrate the complexity that the next few decades will hold. The choices that will be available in the years ahead—about children, about one's own health, about what to allow, what to regulate, and what to ban—will trigger fundamental questions of what it means to be human. What we must keep in mind is that being human is more than belonging to the species *Homo sapiens*; humankind is a social construct and, at its best, being human means celebrating a common, shared existence. This is hard enough to do when we're all of the same species, with roughly the same capabilities and bodies—imagine how much more of a challenge it will be as we start to explore all of the possibilities our technologies have to offer.