

not all) doctors had regarding the female reproductive system, summarized in an ad for the pill in 1964, which proclaimed women now "[u]nfettered ... [from] the cyclic mechanism of her reproductive system. Now to a degree heretofore unknown, she is permitted >normalization," (132) the standard for normality clearly being male physiology.

The eighth and ninth chapters describe the reception of the pill. In chapter 8, Marks shows how the initial popularity of the drug in the 1960s sharply declined by the early 1980s (although in 1982, at least eighty percent of married women had used the pill at some point in their lives). The ninth chapter summarizes the Catholic Church's response to the pill. Although theologically naive (we are led to believe that the patristic objection to birth control stemmed from an "anti-marriage and antiprocreation" attitude (217), an explanation that does not seem internally consistent), it at least summarizes the major documents and gives a sense (through statistics of contraception use) of how thoroughly Western Catholic laypeople surrendered to the dominant culture in this regard. She neglects, however, to describe Catholic support for *Humanae vitae*, and she completely avoids discussion of natural family planning (NFP), although rhythm gets its fair share of text.

The last chapter concludes by giving a good snapshot of worldwide pill use and a helpful summary of the role of governments in promoting the pill, although she sticks mainly to Western governments. Marks' general disregard for feminist literature on the subject leads her to neglect the important role that non-Western governments have played in coercing their female citizens into taking the pill for population-control reasons, as well as the misleading way in which the drug's side effects are presented to this audience.

In general, then, Marks presents much that is valuable in the way of history, and she is not a straightforward apologist for oral contraceptives. The book would benefit from a greater openness to criticizing the frequently indefensible actions of the early pill promoters, as well as a greater receptivity to

evidence of contemporary abuses of the drug in the name of population control.

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Stock, Gregory. *Redesigning Humans: Our Inevitable Genetic Future*. Boston: Houghton Mifflin Company, 2002. Hardcover. 278 pp. Bibliography. Index.

In this book, Gregory Stock, who is director of the Program on Medicine, Technology, and Society at the UCLA School of Medicine, argues that we should embrace our inevitable genetic future by forging ahead with genetic and reproductive technologies such as cloning and germline engineering that will lead to the redesign of the human species. His views stand in direct opposition to those of Francis Fukuyama, who has written the book *Our Posthuman Future: Consequences of the Biotechnology Revolution*, which arrived in bookstores around the same time as Stock's book in Spring 2002. (See review in *The National Catholic Bioethics Quarterly* 2.4 [Winter 2002]: 765-767). Stock's and Fukuyama's books have received considerable attention, and often have been reviewed together in scientific and scholarly journals, magazines, and newspapers. And, lest the reader discount Stock's predictions about future biomedical advances as some kind of futuristic techno-babble, a quick survey of reviews in leading scientific journals shows that most of the reviews come out favoring Stock's views over Fukuyama's. Indeed, there is little evidence in these reviews of the strong opposition to "reproductive cloning" that was expressed earlier by advocates of cloning for the purpose of obtaining embryonic stem cells. Fukuyama himself

noted this underlying support for Stock's views at a forum in Washington, D.C., featuring the two books, and which both he and Stock attended: "I think that Greg's book is actually very useful, because he makes explicit a lot of things that most other researchers in the field, and a lot of people in the biotech industry, aren't willing to say." It is important to read *Redesigning Humans* because the views Stock presents are not all that uncommon in the biotech industry and because the futuristic picture he paints, though shocking, could come very close to representing reality if key regulatory decisions—such as banning human cloning—are not made soon.

The overall premise of *Redesigning Humans* is that powerful new genetic and reproductive technologies will allow us to redesign the biological species *Homo sapiens* as we know it today, that this future occurrence is good, and that it is inevitable. The technologies that are the focus of attention represent a constellation of procedures that includes embryo selection, cloning, and germline engineering. Stock places all three technologies together in a group and collectively calls them "germinal choice technology" or GCT. He points out that they belong together because the outcome of all three, namely the conscious control of the genetic makeup of our offspring, is similar.

Both fascinating in its predictions of the future and infuriating in the rhetorical device Stock often uses to get his points across, *Redesigning Humans* is made up of nine chapters and two short appendices. Two major themes are present. The first is that human genetic redesign is *inevitable*, that it is our fate to direct our own evolution. At every turn in the book, Stock reiterates the notion that there is nothing anyone can do; human genetic manipulation will be a part of our future because "whether we like it or not, this [genetic redesign] *is* the human destiny" (197, original emphasis). This is the starting point for a whole series of arguments against any sort of regulation of genetic or reproductive technologies that will reshape humankind. Among these arguments are: 1) that if such technologies are initially banned and

then surface later, there will not be the "lead time" necessary to iron out imperfections that could cause harm to genetically engineered offspring; 2) that a limitation on the availability of these technologies would leave the underprivileged, who cannot afford them, at a disadvantage and could lead to further fragmentation of society; and 3) that the United States should "get with the program" and be the international leader in developing these emerging technologies rather than relinquish leadership to another country (such as the People's Republic of China). Again, all of these arguments are based on the assumption that, whether human redesign happens in our country or in another, it *will* happen.

The second theme is the *supremacy* of technology over the natural world. Stock truly is enthusiastic about the wonders of technology, about its limitless potential to empower us to exert control over Nature, including our natural selves. He writes about how the silicon chip has allowed us to make "complex machines that rival life itself," how space travel has allowed us to move "beyond the thin planetary film that has hitherto constrained life," and how, with recent progress in biotechnology, "we are taking control of evolution and beginning to direct it" (17). Here, one has a sense of the unqualified faith that Stock has in the capacity of technology to transform us into something better, more wonderful. On the other hand, there appears to be not a shred of appreciation of the ecological basis of life on earth, or the sacred interconnectedness of all living things, for example.

Stock dramatically—and chillingly—likens what is happening today on the biotechnological front to a birthing process. In his analogy, conception occurred when we learned to use stone tools. Quickening coincided with the advent of agriculture. Now, the contractions are forceful and rapid. The head is beginning to show. Will we suddenly lose our nerve because of the realization that life will change forever and because we can barely guess the character of this child of our creation? I hope not. We cannot push the head back, and we

risk doing ourselves grievous harm if we make the attempt. (199)

An example of a rhetorical device that Stock uses throughout his book to dismiss legitimate but intractable criticisms of the technologies he wishes to defend is seen, in a discussion in chapter 4, of the possibility of unintended side effects resulting from germline modification. After presenting arguments that it will be extremely difficult if not impossible to predict and control the impact of introducing "entirely new capabilities orchestrated by many genes," and after acknowledging that "human interventions must be without questionable side effects" in order to be acceptable, he concludes nevertheless that a recommendation for dismissal of germline manipulation is "mistaken" because such a recommendation judges genetic alterations by the "rudimentary gene transfer technologies of today, and it ignores the rapid growth of knowledge about our genes"(63). This response does not address these very valid criticisms. Instead, it simply denies that a problem will exist by asserting an almost naive belief that technology will solve every problem.

In conclusion, *Redesigning Humans* is an important book in the debate on whether

we should allow advanced reproductive and genetic technologies such as embryo selection, cloning, and germline modification to go forward or ban them outright. *Redesigning Humans* clearly articulates one side of the debate. And, as Fukuyama wrote in an online dialogue with Stock: "Greg Stock has clarified all of these issues for us." The challenges that lie ahead of us are great indeed. As we face these future challenges, we would do well to heed the words C. S. Lewis wrote over fifty years ago:

In reality, of course, if any one age really attains, by eugenics and scientific education, the power to make its descendants what it pleases, all men who live after it are the patients of that power. They are weaker, not stronger: for though we may have put wonderful machines in their hands we have preordained how they are to use them. (C.S. Lewis, *The Abolition of Man* [New York: HarperCollins, 1974], 57)

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