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OUTLOOK

Who Will Decide Between Defect and Perfect?

By JEREMY RIFKIN

Tonight, NBC will air an adaptation of Aldous Huxley's classic dystopian novel about a genetically engineered future society. When Huxley wrote "Brave New World" in 1932, no one could have imagined that the scientific insights and technological know-how would exist by the end of this century that could make his vision real.

On March 20, many leading molecular biologists and geneticists met at the University of California at Los Angeles to discuss the prospect of making genetic changes in the human "germ line"—sperm and eggs—that would be passed on to future generations. The ability to alter genes before conception raises the possibility that we might be able to re-engineer our genetic blueprints and redirect the course of our biological evolution.

Curiously absent from the discussion, and the subsequent reporting of the event, was any mention of the word "eugenics." That term—conceived in the 19th century by Sir Francis Galton, Charles Darwin's cousin—is generally divided along two lines. Negative eugenics involves the systematic elimination of so-called undesirable biological traits. Positive eugenics is concerned with the use of selective breeding to "improve" the characteristics of an organism or species.

Because genetic-engineering technologies are by their nature eugenics tools, no thoughtful discussion of this revolution can occur without raising eugenics issues. Some might take offense at the idea that eugenics is built into the new technology. They prefer to equate eugenics with the Nazi experience. But the new eugenics bears little resemblance to the shrill cries of racial purity that culminated in the Holocaust. The old eugenics was

motivated by fear and hate; the new eugenics is spurred by market forces and consumer desire. Genetic engineering is coming to us not as a sinister plot, but rather as a social and economic boon.

The consequences of programming genetic changes into the human germ line are largely unpredictable and unknowable. Nonetheless, a growing number of molecular biologists, medical practitioners and pharmaceutical companies are anxious to take the gamble, convinced that controlling our evolutionary destiny is humankind's next great social frontier. Their arguments are couched in terms of personal health, individual choice and collective responsibility for future generations.

Proponents of human genetic engineering argue that it would be cruel and irresponsible not to use this powerful new technology to eliminate serious "genetic disorders." Is it wrong, ask the molecular biologists, to want healthier babies? The problem with this argument is that once we begin repairing "defects" in the human germ line, there is no logical place to stop.

If diabetes, sickle-cell anemia and cancer are to be prevented by altering the genetic codes of individuals, why not proceed to other less serious "disorders" such as color blindness, dyslexia, obesity and short stature? In the end, why would we ever say no to any alteration that might enhance the well-being of our offspring? It would be difficult to imagine parents rejecting genetic modifications that promised to improve their children's opportunities.

According to a 1992 Harris poll, 43 percent of Americans "would approve using gene

therapy to improve babies' physical characteristics." With Americans already spending billions of dollars on cosmetic surgery to improve their looks and on psychotropic drugs to alter their moods, the use of genetic therapies to enhance unborn children hardly seems far-fetched.

Indeed, many advocates of germ-line intervention already see the potential benefits. They contend that the current debate over corrective measures to address serious illnesses is too limited and urge a more expansive discussion to include the advantage of enhancement

therapy as well. The Economist magazine has suggested, in an editorial, that society needs to move beyond moralistic hand-wringing and embrace the new commercial eugenics opportunities that will soon become available.

The Economist editors asked, "What of genes that might make a good body better, rather than make a bad one good? Should people be able to retrofit them-

selves with extra neuro-transmitters, to enhance various mental powers? Or to change the color of their skin? Or to help them run faster, or lift heavier weights?"

The Economist editorial board made clear that its own biases lay firmly with the marketplace. The new commercial eugenics, it argued, is about ensuring greater consumer freedom so that individuals can make of themselves and their heirs whatever they choose. The editorial concluded with a ringing endorsement of the idea.

While the notion of consumer choice would appear benign, the very idea of eliminating so-called genetic defects raises the

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troubling question of what is meant by the term "defective." Ethicist Daniel Callahan of the Hastings Center penetrates to the core of the issue when he observes that "behind the human horror at genetic defectiveness lurks... an image of the perfect human being. The very language of 'defect,' 'abnormality,' 'disease' and 'risk' presupposes such an image, a kind of prototype of perfection."

Do we then come to see ourselves as miswired from the get-go, riddled with errors in our genetic code? If that is the case, against what ideal norm are we to be measured? If every human being is made up of varying degrees of error, then we search in vain for the norm. What makes the new language of molecular biology so subtly chilling is that it risks creating a new archetype, a flawless, errorless, perfect being to which to aspire—a new man and woman without the warts and wrinkles, vulnerabilities and frailties that have defined us from the beginning of our existence. How tolerant is society likely to be of those whose "errors" go uncorrected? Will we empathize with those who are less than "perfect," or will we see them as "mistakes" that could have been avoided with proper engineering?

Some genetic engineers believe that a future genotocracy is all but inevitable. Molecular biologist Lee Silver of Princeton University writes about a not-too-distant future of two biological classes, which he refers to as the "Gen Rich" and "Naturals." The Gen Rich—perhaps 10 percent of the population—include businessmen, musicians, artists, athletes and intellectuals who are society's elite. They have all been enhanced with specific synthetic genes that allow them to succeed in their fields in ways not conceivable among those born of nature's lottery.

While Silver acknowledges that the increasing polarization of society into Gen Rich and Natural classes might be unfair, he points out that wealthy parents have always been able to provide advantages for their children. "Anyone who accepts the right of affluent

parents to provide their children with an expensive private school education cannot use unfairness as a reason for rejecting the use of reprogenetic technologies," argued Silver.

Like many of his colleagues, Silver is quick to defend the new technologies: "In a society that values human freedom above all else, it is hard to find any legitimate basis for restricting the use of reproductives."

The new genetic-engineering technologies raise one of the most troubling political questions in human history: To whom would we entrust the authority to decide what is a good gene and what is a bad gene? The federal government? Corporations? The scientific community? Few of us, I suspect, could point confidently to any institution or group of individuals. If, however, we were asked whether we would sanction new bio-engineered products that could enhance the physical, emotional and mental well-being of our progeny, many of us would not hesitate to add our support.

We appear caught between our instinctive distrust of these institutional forces and our desire to increase our personal choices in the biological marketplace. Many of us will be eager to take advantage of the new gene therapies—both for ourselves and our offspring—if they deliver on their promise to enhance our physical, emotional and mental health. After all, part of the essence of being truly human is the desire to alleviate suffering and enhance human potential.

The problem is that biotechnology has a distinct beginning but no clear end. In the decades to come, we might well barter ourselves away, a gene at a time, in exchange for some measure of temporary well-being. In the long run, the personal and collective security we have fought so hard to preserve may well be irreversibly compromised in our pursuit of engineered perfection.