The clone wars: A reason online debate

WHAT IS THE CASE for allowing genetic and other biological manipulations with the potential to change human beings? As stem cell research, cloning, and other technologies develop, perhaps no other question is more central to our future as a species--and perhaps no other question is as hotly contested.

In the wake of the first meeting of the President's Council on Bioethics and as Congress considered new legislation on the matter, we invited two of the major players in the field to debate the issue on reason's Web site. Gregory Stock, who makes the affirmative case, is director of the Program of Medicine, Technology, and Society at the University of California at Los Angeles School of Medicine. He is also the author of the new book Redesigning Humans: Our Inevitable Genetic Future (Houghton Mifflin). Arguing against genetic and biological manipulations is Francis Fukuyama, professor of international political economy at the Paul H. Nitze School of Advanced International Studies of Johns Hopkins University. He is the author of Our Posthuman Future: Consequences of the Biotechnology Revolution (Farrar, Straus & Giroux).

The debate unfolded over the week of March 18-22, with each participant responding within hours of the other's posting. Readers interested in more information can visit www.reason.com/biclone.shtml, which includes links to reason's voluminous coverage of cloning and biotechnology. Of special interest is "Criminalizing Science," in which a transpartisan coalition of thinkers and commentators respond to a left-right alliance to outlaw "therapeutic cloning" and stigmatize genetic research.

Go Ahead and Clone

Don't cause real damage to assuage phantom fears.

Gregory Stock

THERE HAS BEEN A lot of hand wringing recently about cloning. Considering that not a single viable cloned human embryo has yet been created, that the arrival of a clinical procedure to do so seems quite distant, and that having a delayed identical twin (which is, after all, what a clone is) has limited appeal, why all the fuss?

The fuss arises because cloning has become a proxy for broader fears about the new technologies emerging from our unraveling of human biology. Critics like Francis Fukuyama imagine that if we can stop cloning we can head off possibilities like human enhancement, but they're dreaming. As we decipher our biology and learn to modify it, we are learning to modify ourselves--and we will do so. No laws will stop this.

Embryo selection, for example, is a mere spin-off from widely supported medical research of a sort that leaves no trail and is feasible in thousands of labs throughout the world. Any serious attempt to block such research will simply increase the potential dangers of upcoming technologies by driving the work out of sight, blinding us to early indications of any medical or social problems.

The best reason not to curb interventions that many people see as safe and beneficial, however, is not that such a ban would be dangerous but that it would be wrong. A ban would prevent people from making choices aimed at improving their lives that would hurt no one. Such choices should be allowed. It is hard for me to see how a society that pushes us to stay healthy and vital could justify, for instance, trying to stop people from undergoing a genetic therapy or consuming a drug cocktail aimed at retarding aging. Imposing such a ban requires far more compelling logic than the assertion that we should not play God or that, as Fukuyama has suggested, it is wrong to try to transcend a "natural" human life span.

What's more, a serious effort to block beneficial technologies that might change our natures would require policies so harsh and intrusive that they would cause far greater harm than is feared from the technologies themselves. If the War on Drugs, with its vast resources and sad results, has been unable to block people's access to deleterious substances, the government has no hope of withholding access to technologies that many regard as beneficial. It would be a huge mistake to start down this path, because even without aggressive enforcement, such bans would effectively reserve the technologies for the affluent and privileged. When abortion was illegal in various states, the rich did not suffer; they just traveled to more-permissive locales.

Restricting emerging technologies for screening embryos would feed deep class divisions. Laboratories can now screen a six-cell human embryo by teasing out a single cell, reading its genes, and letting parents use the results to decide whether to implant or discard the embryo. In Germany such screening is criminal. But this doesn't deny the technology to affluent Germans who want it: They take a trip to Brussels or London, where it is legal. As such screenings become easier and more informative, genetic disease could be gradually relegated to society's disadvantaged. We need to start thinking about how to make the tests more, not less, accessible.

But let's cut to the chase. If parents can easily and safely choose embryos, won't they pick ones with predispositions toward various talents and temperaments, or even enhanced performance? Of course. It is too intrusive to have the government second-guessing such decisions. British prohibitions of innocuous choices like the sex of a child are a good example of undesirable government intrusion. Letting parents who strongly desire a girl (or boy) be sure to have one neither injures the resulting child nor causes gender imbalances in Western countries.

Sure, a few interventions will arise that virtually everyone would find troubling, but we can wait until actual problems appear before moving to control them. These coming reproductive technologies are not like nuclear weapons, which can suddenly vaporize large numbers of innocent bystanders. We have the luxury of feeling our way forward, seeing what problems develop, and carefully responding to them.

The real danger we face today is not that new biological technologies will occasionally cause injury but that opponents will use vague, abstract threats to our values to justify unwarranted political incursions that delay the medical advances growing out of today's basic research. If, out of concern over cloning, the U.S. Congress succeeds in criminalizing embryonic stem cell research that might bring treatments for Alzheimer's disease or diabetes--and Fukuyama lent his name to a petition supporting such laws--there would be real victims: present and future sufferers from those diseases.

We should hasten medical research, not stop it. We are devoting massive resources to the life sciences not out of idle curiosity but in an effort to penetrate our biology and learn to use this knowledge to better our lives. We should press ahead. Of course, the resultant technologies will pose challenges: They stand to revolutionize health care and medicine, transform great swaths of our economy, alter the way we conceive our children, change the way we manage our moods, and even extend our life spans.

The possibilities now emerging will force us to confront the question of what it means to be a human being. But however uneasy these new technologies make us, if we wish to continue to lead the way in shaping the human future we must

actively explore them. The challenging question facing us is: Do we have the courage to continue to embrace the possibilities ahead, or will we succumb to our fears and draw back, leaving this exploration to braver souls in other regions of the world?

Sensible Restrictions

There are good reasons to regulate future biotechnologies.

Francis Fukuyama

GREGORY STOCK OFFERS TWO sets of arguments against restricting future biotechnologies: first, that such rules are unnecessary as long as reproductive choices are being made by individual parents rather than states, and second, that they cannot be enforced and will be ineffective even if they were to be enacted. Let me respond to each in turn.

While genetic choices made by parents (either in the short run, via pre-implantation genetic diagnosis, or in the more distant future, through germline engineering) are on the whole likely to be better than those made by coercive states, there are several grounds for not letting individuals have complete freedom of choice in this regard.

The first two are utilitarian. When we get into human germline engineering, in which modifications will be passed on to successive generations, safety problems will multiply exponentially over what we today experience with drug approval. Genetic causation is highly complex, with multiple genes interacting to create one outcome or behavior and single genes having multiple effects. When a long-term genetic effect may not show up for decades after the procedure is administered, parents will risk a multitude of unintended and largely irreversible consequences for their children. This would seem to be a situation calling for strict regulation.

A second utilitarian concern has to do with possible negative externalities, which is the classic ground for state regulation, accepted by even the most orthodox free market economists. An example is sex selection. Today in Asia, as a result of cheap sonograms and abortion, cohorts are being born with extremely lopsided sex ratios--117 boys for every 100 girls in China and at one point 122 boys for every 100 girls in Korea. Sex selection is rational from the standpoint of individual parents, but it imposes costs on society as a whole in terms of the social disruption that a large number of unattached and unmarriageable young males can produce. Similar negative externalities can arise from individual choices to, for example, prolong life at the cost of a lower level of cognitive and physical functioning.

A further set of concerns about the ability to "design" our children has to do with the ambiguity of what constitutes improvement of a human being, particularly when we get into personality traits and emotional makeup. We are the product of a highly complex evolutionary adaptation to our physical and social environment, which has created an equally complex whole human being. Genetic interventions made out of faddishness, political correctness, or simple whim might upset that balance in ways that we scarcely understand--in the interest, for example, of making boys less violent and aggressive, girls more assertive, people more or less competitive, etc. Would an African American's child be "improved" if we could genetically eliminate his or her skin pigmentation?

The final issue concerns human nature itself. Human rights are ultimately derived from human nature. That is, we assign political rights to ourselves based on our understanding of the ways members of our species are similar to one another and different from other species. We are fortunate to be a relatively homogenous species. Earlier views that blacks were not intelligent enough to vote, or that women were too emotional to be granted equal political rights, proved to be empirically false. The final chapter of Greg Stock's book opens up the prospect of a future world in which this human homogeneity splinters, under the impact of genetic engineering, into competing human biological kinds. What kind of politics do we imagine such a splintering will produce? The idea that our present-day tolerant, liberal, democratic order will survive such changes is farfetched: Nietzsche, not John Stuart Mill or John Rawls, should be your guide to the politics of such a future.

Stock's second set of arguments is based on his belief that no one can stop this technology. He is certainly right that if some future biotechnology proves safe, cheap, effective, and highly desirable, government would not be able to stop it and probably should not try. What I am calling for, however, is not a ban on wide swaths of future technology but rather their strict regulation in light of the dangers outlined above.

Today we regulate biomedical technology all the time. People can argue whether that technology is properly regulated and where exactly to draw various regulatory lines. But the argument that procedures that will be as potentially unsafe and ethically questionable as, say, germline engineering for enhancement purposes cannot in principle be regulated has no basis in past experience.

We slow the progress of science today for all sorts of ethical reasons. Biomedicine could advance much faster if we abolished our rules on human experimentation in clinical trials, as Nazi researchers did, and allowed doctors to deliberately inject infectious substances into their subjects. Today we enforce rules permitting the therapeutic use of drugs like Ritalin, while prohibiting their use for enhancement or entertainment.

The argument that these technologies will simply move to more favorable jurisdictions if they are banned in any one country may or may not carry weight; it all depends on what they are and what the purpose of the regulation is. I regard a ban on reproductive cloning to be analogous to current legislation banning incest, which is based on a similar mix of safety and ethical considerations. The purpose of such a ban would not be undermined if a few rich people could get themselves cloned outside the country. In any event, the world seems to be moving rather rapidly toward a global ban on reproductive cloning. The fact that the Chinese may not be on board shouldn't carry much weight; the Chinese also involuntarily harvest organs from executed prisoners and are hardly an example we would want to emulate.

I don't think that a set of regulations designed to focus future biomedicine on therapeutic rather than enhancement purposes constitutes oppressive state intervention or goes so far beyond the realm of what is done today that we can declare its final failure in advance. By Greg Stock's reasoning, since rules against doping in athletic competitions don't work 100 percent of the time, we should throw them out altogether and have our athletes compete not on the basis of their natural abilities but on the basis of who has the best pharmacologist. I'd rather watch and participate in competitions of the old-fashioned kind.

Biotech Tyranny

Banning enhancement would be massively invasive

Gregory Stock

I HAVE NO PROBLEM with attempts to address serious externalities that arise from otherwise harmless personal activities. But if government does not bear a heavy burden of proof when justifying such intrusions into our lives, it can employ vague arguments about social harm to take away our basic freedoms. Francis Fukuyama would push us toward just such intrusions by erecting a powerful regulatory structure charged with ensuring the ethical and social desirability of future technologies.

Fukuyama is so suspicious of change in general and new technology in particular that he won't even acknowledge the desirability of allowing people to use safe and beneficial interventions that would almost certainly improve their lives. He will admit only that if a technology is "safe, cheap, effective, and highly desirable," government "probably [my emphasis] should not try" to stop it. If he won't even embrace technologies that meet this high threshold, he would never allow the far more problematic possibilities of the real world. But facing such possibilities is precisely what has improved our health and raised our standard of living so greatly during the last century.

Fukuyama speaks of safety, but his reluctance about even safe and highly desirable technologies suggests that his major concern is neither safety nor aberrant misuse. Moreover, he admits that these dangers are well covered by existing agencies and institutions. He makes his primary focus explicit in his book when he complains that the Food and Drug Administration is charged only with establishing "safety and efficacy," while we need institutions that can look at ethical consequences.

For the most part, Fukuyama is vague when it comes to precisely what we should prevent. This may be good strategy, because notions of safety, caution, and minimized externalities are so appealing. But it is deceptive because it is in the details that the rubber meets the road.

In fairness, Fukuyama is specific about banning human cloning, which in today's climate is about as risky as coming out for motherhood. His reasoning here is faulty, however. To liken a blanket ban on reproductive cloning to a ban on incest is not even fathomable if one considers the cloning of a deceased child or someone other than the parent. But as I said, cloning is a sideshow.

A more interesting situation is sex selection. I argued that in the U.S. such selection--which can be done by sorting sperm, so that no embryos are destroyed--is innocuous. Sex selection does not harm children; indeed, it likely benefits them when a child of the "wrong" sex would seriously disappoint his or her parents. Fukuyama brings up the lopsided sex ratio in China, but this does not justify regulating the practice here, where such imbalances do not arise from the practice. Moreover, the problem in China is hardly an argument for government regulation, since sex selection there has long been illegal. Indeed, government regulation in China--namely, its one-child policy--exacerbates the problem of gender balance by pushing parents who want a boy toward aborting a girl, since they can't try again. Fukuyama opposes sex selection here and has proposed the formation of a review board like the one in Britain that has barred this procedure. But does he have anything better to offer than a fear that the practice would be a step down a slippery slope? If he sees a serious externality to sex selection in the U.S., it would be worth hearing about.

In response to my comments about the obvious appeal and benefit of future anti-aging medications, Fukuyama points out that "negative externalities can arise from individual choices to...prolong life at the cost of a lower level of cognitive and physical functioning." This is true, but it is a frightening basis for legislation (as opposed to decisions regarding government funding). I shudder to think about regulatory boards tasked with balancing the additional years that an individual seeks against the social cost of those years. To see the peril, we need only apply Fukuyama's logic to medicine generally.

If he does not want to allow interventions to slow the onset of aging and bring longer lives of relative health (though presumably not matching the vitality of youth), then why not block all treatments for the aged and debilitated? Their extra years are a net cost, and withholding medical treatment for those over 65 would work wonders for our ailing Social Security system. It isn't much of a step to go even further and block medical interventions that save accident victims who suffer crippling injuries.

Fukuyama no doubt feels that a sharp line between therapy and enhancement will avoid such perversions, but this distinction does not stand up to scrutiny. This line will increasingly blur in the years ahead. Anti-aging interventions, for example, fall in a large realm that is best labeled therapeutic enhancement. If we could gain an extra decade by strengthening our immune system or our anti-oxidation and cellular repair mechanisms, this would clearly be a human enhancement. But it would also be a preventive therapy, because it would delay cardiovascular disease, senile dementia, cancer, and other illnesses of aging, which we spend billions trying to treat.

Banning enhancement from sports competitions can obviously be justified as away of enforcing the agreed-upon rules of the game. But neither Fukuyama nor our democratic political institutions have a recognized right to set the rules of life. Outlawing a whole realm of benefits that are not injuring others is not just impractical; it is tyranny. Enhancement is not wrong, and when such possibilities become safe and reliable large numbers of people will seek them. Fukuyama is right about the ambiguities of "improvement," but I have not suggested some grandiose government project that seeks human perfection. I have spoken only of freely made parental choices, and I argue that such choices are likely to lead toward great diversity.

I do not argue that parents need no oversight in the use of advanced technology for the conception of children, just that it should be minimal, should address real rather than imagined problems, and should be concerned with the child's safety rather than the social order or the personhood of embryos. When it comes to children, I trust the judgment of individual parents more than that of political or judicial panels. Most parents are deeply concerned about the welfare of their own children, whereas such panels are composed of individuals who are more oriented toward larger social and philosophical concerns than the well-being of particular individuals.

Upholding Norms

Our laws should be updated to take account of technological advances.

Francis Fukuyama

I THINK GREG STOCK has misunderstood a couple of the points I was trying to make in my initial response. The issue with regard to sex selection is not that it would be a serious problem in this country; it's possible now, after all, but not widely practiced. The point is that individual choice coupled with the spread of cheap biomedical technologies can quickly produce population-level effects with serious social consequences. In other words, the problem with eugenics is not simply that it is state-sponsored and coercive; if practiced by enough individuals, it can also have negative consequences for the broader society.

I suspect that if the U.S. ever gets into something like this in the future, it will have to do with potential "enhancement" targets other than sex. One I speculate about in my book is sexual preference: It seems pretty clear to me that if parents, including ones who are perfectly accepting of gays today, had the choice, they would select against their children being gay, if for no other reason than their desire to have grandchildren. (Contrary to Stock, by the way, gays can't reproduce, so I'm not quite sure how they'd do germ-line intervention to produce gay children.) The proportion of gays in the population could drop quite dramatically, and I'm not at all sure that society as a whole (let alone gays as a persecuted minority) would be enhanced as a result.

Governments can intervene successfully to correct individual choices like these. The severe sex-ratio imbalance in Korea that emerged in the early 1990s was noticed, and the government took measures to enforce existing laws against sex selection so that today the ratio is much closer to 50-50. If the government of a young democracy like Korea can do this, I don't see why we can't.

The reason I noted that life extension coupled with diminished capability can create negative externalities was not to suggest that we should ban or regulate such procedures. Stock is perfectly right that we already have adopted a lot of medical innovations that produce this tradeoff, and that we can't stop future advances for this reason. The reason this is an important issue is that in contemporary debates over stem cells and cloning there is an unquestioned assumption that anything that will prolong life or cure disease is obviously desirable and automatically trumps other ethical concerns.

This is not obvious to me. Anyone who has walked around a nursing home recently (as I have) can see that past advances in biomedicine have created a horrible situation for many elderly people who can't function at anything close to the levels they'd like but who also can't die. Of course, new advances in biotechnology may provide cures for degenerative, age-related diseases such as Alzheimer's or Parkinson's, but the research community is in effect just cleaning

up the mess it created. So when we are balancing near-term rights and wrongs, the argument that more medical advance is necessarily good needs to be treated with some skepticism. At the hearing on Florida Republican Dave Weldon's bill banning cloning last summer, a representative of a patients advocacy group said the baby boomers were getting older and desperately needed cures for a variety of diseases with which they would soon be afflicted--as if research cloning would prevent them from ever having to die. If you want a real nightmare scenario, cons ider one in which we double life spans but increase periods of debility by a few decades.

Stock is correct in saying that much of my interest in having new regulatory institutions in place has to do with ethical and social consequences of new technology and not simply safety. States intervene all the time to shape norms and produce certain social outcomes. Incest is an example, and it seems to me a very apt analogy to reproductive cloning. Of course, you can find sympathetic situations where an individual might want to clone, say, a dead child. But you can also find sympathetic situations where you might want a brother and sister to marry and have children (e.g., they have grown up apart, have no dangerous recessive genes, etc.).

But the fact that there are certain sympathetic cases does not mean that society would be better off without a ban on incest. The possible benefits of cloning need to be balanced against social harms. Consider the following scenario: A wife decides to clone herself because a couple cannot otherwise have children. As their daughter grows up to be a teenager, the husband will find his wife growing older and less sexually attractive. In the meantime, his daughter, who will be a physical duplicate of her mother, will blossom into sexual maturity and increasingly come to resemble the younger woman the husband fell in love with and married. It is hard to see how this situation would not produce an extremely unhealthy situation within the family; in a certain number of cases, it would lead to incest.

Stock is using a rhetorical ploy in suggesting that I am recommending new, tyrannical government intrusion into private lives. Rather, I am recommending an extension of existing institutions to take account of the new possibilities that will be put before us as a result of technological advance. This may result in regulation irksome to industry and to certain individuals, but it will be no more tyrannical than existing rules banning incest or, in the case of the Koreans, banning sex selection. All societies control social behavior through a complex web of norms, economic incentives, and laws. All I am suggesting is that the law part of the mix will need to be updated and strengthened in light of what is to come.

Clones, Gays, and the Elderly

Overestimating the threats posed by technology--and underestimating the threats posed by regulation.

Gregory Stock

I'M GLAD FRANCIS FUKUYAMA agrees that sex selection here poses no serious threat. To me, this means it should not be regulated. Moreover, we should also hold off on passing legislative protections against other such technologies until actual problems show up. Fukuyama may worry about rapid "population-level effects with serious social consequences," but his example of Korea's success at handling the sex-ratio imbalances that arose there is not an invitation to regulate, but evidence that we can afford to wait.

Outlawing a whole realm of benefits not injurious to others--namely enhancements--would be tyranny. Potent regulatory structures that pass judgment on the morality and social cost of future technologies would move us in this direction. Judging from the composition of President Bush's Bioethics Advisory Commission, many potential regulators would be less moderate than Fukuyama and quite willing to abridge people's choices.

Consider Fukuyama's argument about cloning. It is one thing to worry about the obvious medical dangers of so unproven a technology, another to justify a complete ban with stories about a future father's possible sexual attraction for his wife's budding clone-daughter. Kids hardly need to resemble a parent to inspire incest, as many adoptees and stepchildren can no doubt confirm. If we start regulating families on the basis of hypothetical sexual attractions and perversions--and we can conjure ones more lurid and likely than Fukuyama's clone love--we will ultimately damage rather than protect the family. We have laws governing child abuse; let's content ourselves with enforcing them.

As to gays, if there are fewer in the future because of people's choices about the genetics or rearing of their kids, so be it. But I am not at all convinced it would play out that way. Fukuyama asserts that gays can't reproduce, but they do so all the time using donor eggs or sperm, surrogate mothers, and partners of the opposite sex. Moreover, such reproduction will get ever easier. If we want to be sure to maintain our gay population, additional AIDS research would accomplish more than bans on embryo screening.

I'm glad to hear that Fukuyama doesn't oppose anti-aging interventions; I've previously heard him say only that government would be unable to block such enhancements. He is right, of course, that advances in health care bring many challenges, and that the needless prolongation of a dying loved one's pain and decrepitude is nothing to boast about. But my reaction is not to deny the value of the good added years that modern medicine has brought so many of us, but to recognize that we must find better ways for individuals to reach death with dignity

when it draws near. Why must so many of our elderly try to squirrel away a stash of lethal drugs in case they might be captured by a medical system that would torture them for their final few weeks or months? The issue of cloning pales alongside this cruelty.

Fukuyama says he is urging only a harmless extension of existing institutions. I disagree. The relegation of decisions about human reproduction to a political process typically driven by impassioned zealots on either side would invite disaster. New agencies with the power to project abstract philosophy, social theory, and even religious dogma into family life would be a frightening development. And when lawmakers on Capital Hill start telling medical researchers not to do certain types of embryonic stem cell research because adult stem cells will work just as well, something is very wrong. These legislators are micromanaging a realm they do not understand, assaulting our freedom of inquiry, and ignoring the entreaties of those afflicted with serious diseases. These steps are not small.

Nietzschean Endgame

Self-enhancement and "immense wars of the spirit."

Francis Fukuyama

I THINK THAT ONE of the great virtues of Greg Stock's book is that he is willing to take some risks in predicting what kinds of changes might be in store in the long-run future in terms of enhancement technology. Most people in the scientific community are not willing to speculate out beyond the next five to 10 years. I urge people to read the last chapter of Redesigning Humans if you want to understand why I'm worried about biotechnology.

There, Stock suggests a number of things that might happen in a future world in which various forms of enhancement become safe, effective, and inexpensive. Among other things, he suggests that reproduction via sex may disappear altogether as a result of the difficulties of handling artificial chromosomes in vivo. Reproduction could not happen outside a lab. We could freely alter our personalities and moods through a combination of drugs and genetics.

But most importantly, the human race disappears. He suggests that there will be differentiation within our species, and, in effect, new speciation. Some groups of people may decide to enhance their children for musical ability, some for athletic prowess, others for math or literary ability. There will be a basic social divide between the enhanced and the unenhanced, and in the competitive situation that will emerge, it will be difficult for people not to join into this genetic arms race.

Moreover, genetic differentiation will become a cornerstone of international politics. If we and the Germans decide not to take part, the Chinese will charge ahead with self-enhancement, and then we as a nation will be challenged to follow suit.

What I don't understand is why anyone thinks that in this kind of world--one in which the existing genetic homogeneity of the human race is being undermined--we will be able to continue to live within the nice, liberal democratic framework that we currently enjoy. Stock argues as if we can presume the continuity of that political world and fully enjoy the technological paradise opening before us, and that the biggest arguments we will have will concern whether we have a little more regulation and less progress, or the reverse.

But as I noted earlier, in this kind of world Nietzsche is the best guide to what politics will be like. What is going to happen to equality of opportunity when a non-musically enhanced child aspires to be a musician, which has become not just the territory of a guild of musicians, but of a subspecies of musicians whose total genetic identity is tied up in that form of life? Why shouldn't the enhanced start demanding superior political rights for themselves, and seek to dominate the unenhanced, since they will in fact be superior not just as a result of acquired social status and education, but of genetic enhancements as well? What is going to happen to international conflict, when other, hostile societies are not just culturally different, but not fully human either?

The fact is that there will be no theoretical or practical reason at that point not to abandon the principle of universal human equality (i.e., the one enshrined in the Declaration of Independence). It is strongly believed in today in part as a matter of faith, but also in part because it is empirically supported. When the principle was enunciated in 1776, blacks and women were not granted political rights in North America because it was believed that they were too stupid, or too emotional, or otherwise lacking in some essential human characteristic to be granted equal rights. This view resurfaced as scientific racism in the early 20th century, and one of the great achievements of our time is that both the empirical doctrine and the politics built on it have been discredited.

So if we are going to embrace this technology and the prospect of human self-enhancement, we ought to do it with our eyes open. We should say, with Nietzsche, that this is a wonderful opportunity because we can finally transcend liberal democracy, and reestablish the possibility of natural aristocracy, of social hierarchy, of the pathos of distance (i.e., the inability to empathize with the suffering of others), and otherwise usher in an era of "immense wars of the spirit."

As I said, I'm grateful that Greg Stock has clarified all of these issues for us.