

Testimony Before
Subcommittee on Science, Technology, and Space
Senate Committee on Commerce, Science, and Transportation
on
“Human Cloning Prohibition Act of 2001”
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Testimony of Leon R. Kass, M.D., Ph.D.

Senator Brownback and Members of the Committee. My name is Leon Kass, and I am the Addie Clark Harding Professor in the Committee on Social Thought and the College at the University of Chicago. Originally trained both as a physician and a biochemist, I have for more than thirty years been professionally concerned with the social and ethical implications of biomedical advance. In fact, my first writing on this subject was in 1967 on the dangers of human cloning. I am therefore very grateful for the opportunity to testify before this Committee in support of the bill to prohibit human cloning. And I profoundly grateful to you, Senator Brownback, for your vision in recognizing the momentous choice that is now before us and for your courage in stepping up to steer us away from what is surely a very great danger to the future of our humanity.

My testimony in support of this bill is in the form of an essay written precisely to gain support for such a bill. (The essay will appear soon in *The New Republic*.) I begin by calling attention to what is humanly at stake in the decision about human cloning and also to the fact that we have here a golden opportunity to exercise deliberate human command over where biotechnology may be taking us. I next present four arguments against reproductive cloning of human beings: (1) it constitutes unethical experimentation; (2) it threatens identity and individuality; (3) it turns procreation into manufacture

(especially when understood as the harbinger of manipulations to come); and (4) it means despotism over children and perversion of parenthood. I conclude by arguing, on multiple grounds, that the only effective way to prevent reproductive cloning is to stop the process at the start, at the stage of creating the embryonic clones, just as is provided for in the present bill, and I show the weaknesses of the other widely discussed alternative. I heartily endorse this bill not only because it offers our only real hope of preventing the cloning of human beings, but also because it will give us for the first time some control over those biotechnological powers that threaten to bring about a “post-human” future.

Here is the essay, in full.

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Preventing a Brave New World: Why We Should Ban Human Cloning Now

Leon R. Kass

The urgency of the great political struggles of the twentieth century, successfully waged against totalitarianisms first right and then left, seems to have blinded many people to a deeper and ultimately darker truth about the present age: all contemporary societies are travelling briskly in the same utopian direction. All are wedded to the modern technological project; all march eagerly to the drums of progress and fly proudly the banner of modern science; all sing loudly the Baconian anthem, “Conquer nature, relieve man’s estate.” Leading the triumphal procession is modern medicine, becoming daily ever more powerful in its battle against disease, decay, and death thanks especially to astonishing achievements in biomedical science and technology—achievements for which we must surely be grateful.

Yet contemplating present and projected advances in genetic and reproductive technologies, in neuroscience and psychopharmacology, and in the development of artificial organs and computer-chip implants for human brains, we now clearly recognize new uses for biotechnical power that soar beyond the traditional medical goals of healing disease and relieving suffering. Human nature itself lies on the

operating table, ready for alteration, eugenic and psychic “enhancement,” and wholesale redesign. In leading laboratories, academic and industrial, new creators are confidently amassing their powers and quietly honing their skills, while on the street their evangelists are zealously prophesying a post-human future. For anyone who cares about preserving our humanity, it is time to pay attention.

Some transforming powers are already here. The pill. *In vitro* fertilization. Bottled embryos. Surrogate wombs. Cloning. Genetic screening. Genetic manipulation. Organ harvests. Mechanical spare parts. Chimeras. Brain implants. Ritalin for the young, Viagra for the old, and Prozac for everyone. And, to leave this vale of tears, a little extra morphine accompanied by Muzak.

Years ago Aldous Huxley saw it coming. In his charming but disturbing novel, *Brave New World* (published in 1932, yet more powerful on each re-reading), he made its meaning strikingly visible for all to see. Unlike other frightening futuristic novels of the past century, such as Orwell’s already dated *Nineteen Eighty-four*, Huxley shows us a dystopia that goes with, rather than against, the human grain—indeed, it is animated by our own most humane and progressive aspirations. Following those aspirations to their ultimate realization, Huxley enables us to recognize those less obvious but often more pernicious evils that are inextricably linked to successful attainment of partial goods.

Huxley paints human life seven centuries hence, living under the gentle hand of humanitarianism rendered fully competent by genetic manipulation, psychoactive drugs, hypnopaedia, and high-tech amusements. At long last, mankind has succeeded in eliminating disease, aggression, war, anxiety, suffering, guilt, envy, and grief. But this victory comes at the heavy price of homogenization, mediocrity, trivial pursuits, shallow attachments, debased tastes, spurious contentment, and souls without loves or

longings. The Brave New World has achieved prosperity, community, stability, and nigh-universal contentment, only to be peopled by creatures of human shape but of stunted humanity. They consume, fornicate, take “soma,” enjoy “centrifugal bumble-puppy,” and operate the machinery that makes it all possible. They do not read, write, think, love, or govern themselves. Art and science, virtue and religion, family and friendship are all passé. What matters most is bodily health and immediate gratification: “Never put off till tomorrow the fun you can have today.” Brave new man is so dehumanized that he does not even recognize what has been lost.

Huxley’s novel is, of course, science fiction. Prozac is not yet Huxley’s soma; cloning by nuclear transfer or splitting embryos is not exactly Bokanovskification; MTV and virtual-reality parlors are not quite the “feelies”; and our current safe-and-consequenceless sexual practices are not universally as loveless or as empty as in the novel. But the kinships are disquieting, all the more so since our technologies of bio-psycho-engineering are still in their infancy—yet in ways that make all too clear what they might look like in their full maturity. Indeed, the cultural changes technology has already wrought among us should make us even more worried than Huxley would have us be.

In Huxley’s novel, everything proceeds under the direction of an omnipotent—albeit benevolent—world state. But the dehumanization he portrays does not really require despotism or external control. To the contrary, precisely because the society of the future will deliver exactly what we most want—health, safety, comfort, plenty, pleasure, peace of mind and length of days—we can reach the same humanly debased condition solely on the basis of free human choice. No need for World

Controllers. Just give us the technological imperative, liberal democratic society, compassionate humanitarianism, moral pluralism, and free markets and we can take ourselves to Brave New World all by ourselves—and, what is most distressing, without even deliberately deciding to go. In case you hadn't noticed, the train has left the station and is gathering speed, but no one seems to be in charge.

Some among us are, of course, delighted by this state of affairs: some scientists and biotechnologists, their entrepreneurial backers, and a cheering claque of sci-fi enthusiasts, futurologists, and libertarians. There are dreams to be realized, powers to be exercised, honors to be won, and money—big money—to be made. But most of us are worried, and not, as the proponents self-servingly claim, because we are either ignorant of science or afraid of the unknown. To the contrary, we can see all too clearly where the train is headed, and we do not like the destination. We can distinguish mere cleverness about means from wisdom about ends, and we are loath to entrust the future of the race to those who can't tell the difference. No friend of humanity cheers for a post-human future.

Yet for all our disquiet, we have until now done nothing to prevent it. We either hide our heads in the sand because we enjoy the blessings medicine keeps supplying, or we rationalize our inaction by declaring that human engineering is inevitable and we can do nothing about it. In either case, we are complicit in preparing for our own degradation, in some respects more to blame than the biozealots who, however misguided, are putting their money where their mouth is. Denial and despair, unattractive outlooks in any situation, become morally reprehensible when circumstances summon us to keep the world safe for human flourishing. Our immediate ancestors, taking up the challenge of their time, rose to the occasion and rescued the human future from the cruel dehumanizations of Nazi and Soviet tyranny. It is our more difficult task to find ways to preserve it from the soft dehumanizations of well-meaning but hubristic bio-technical “re-creationism”—and to do it, of course, without undermining biomedical science or rejecting its genuine contributions to human welfare.

Impediments to Exercising Responsibility

Truth to tell, it will not be easy for us to do so, and we know it. But rising to the challenge requires recognizing the difficulties. For there are indeed many features of modern life that will conspire to frustrate efforts aimed at the human control of the biomedical project. First, we Americans believe in technological automatism: where we do not foolishly believe that all innovation is progress, we fatalistically believe that it is inevitable (“if it can be done, it will be done, like it or not”). Second, we believe in freedom: freedom of scientists to inquire, technologists to develop, and entrepreneurs to invest and profit, and freedom of private citizens to make use of existing technologies to satisfy any and all personal desires, including the desire to reproduce by whatever means. Third, the biomedical enterprise occupies the moral high ground of compassionate humanitarianism, upholding the supreme values of modern life—cure disease, prolong life, relieve suffering—in competition with which other moral goods rarely stand a chance. (“What the public wants is not to be sick,” says James (DNA) Watson, “and if we help them not to be sick, they’ll be on our side.”) Fourth, regarding other moral goods, our cultural pluralism and easy-going relativism make it difficult to reach consensus on what we should embrace and what we should oppose: moral objections to this or that biomedical practice are often facilely dismissed as religious or sectarian. Many people are unwilling to pronounce judgments about what is good or bad, right and wrong, even in matters of great importance, even for themselves, never mind for others or society as a whole. Fifth, the biomedical project is now deeply entangled with commerce: there are increasingly powerful economic interests in favor of going full steam ahead, and no economic interests in favor of going slow. Sixth, because we live in a democracy, we face political difficulties in gaining a consensus to direct our future, and we have almost no political experience in trying to curtail the development of any new biomedical technology. Finally, and perhaps most troubling, our views of the meaning of our humanity have been so transformed by the scientific-technological approach to the world that we are in danger of forgetting what we have to lose, humanly speaking.

But though the difficulties are real, our situation today is far from hopeless. Regarding each of the aforementioned impediments, there is another side to the story. Though we love our gadgets and

believe in progress, we have lost our innocence regarding technology. The environmental movement especially has alerted us to unintended damage caused by unregulated technological advance and has taught us how certain dangerous practices can be curbed. Though we favor freedom of inquiry, we recognize that experiments are deeds not speeches, and we prohibit experimentation on human subjects without their consent, even when cures from disease might be had by unfettered research. And we limit so-called reproductive freedom by proscribing incest, polygamy, and the buying and selling of babies. Although we esteem medical progress, biomedical institutions have ethics committees that judge research proposals on moral grounds, and, when necessary, uphold the primacy of human freedom and dignity even over scientific discovery. Notwithstanding our moral pluralism, national commissions and review bodies have sometimes reached moral consensus to recommend limits on permissible scientific research and technological application. On the economic front, the patenting of genes and life forms and the rapid rise of genomic commerce have elicited strong concerns and criticisms, leading even former enthusiasts for the new biology to recoil from the impending commodification of human life. Though we lack political institutions experienced in setting limits on biomedical innovation, federal agencies years ago rejected the development of the plutonium-powered artificial heart, and we have nationally prohibited commercial traffic in organs for transplantation, even though a market would increase the needed supply. In recent years, several American states and many foreign countries have successfully taken political action, making certain practices illegal and placing others under moratoria (e.g., creation of human embryos solely for research; human germline genetic alteration). Finally, most of us are not yet so degraded or cynical as to fail to be revolted by the society depicted in Huxley's novel. Though the obstacles to effective action are significant, they offer no excuse for resignation. Besides, it would be disgraceful to concede defeat even before we enter the fray.

Not the least of our difficulties in trying to exercise control over where biology is taking us is the fact that we do not get to decide, once and for all, for or against the destination of a post-human world. The scientific discoveries and technical powers that will take us there come to us piecemeal, one at a time and seemingly independent from one another, each often attractively introduced as a measure that

will “help us not to be sick.” But sometimes we come to a clear fork in the road where decision is possible and where we know that the decision we make will make a world of difference, indeed, will make a permanently different world. Fortunately, we stand now at the point of such a momentous decision. Events have conspired to provide us with a perfect opportunity to seize the initiative and to gain some control of the biotechnical project. I refer to the prospect of human cloning, a practice absolutely central to Huxley’s fictional world. Indeed, creating and manipulating life in the laboratory is the gateway to the Brave New World, not only in fiction but also in fact.

Cloning: A Perfect Opportunity for Responsibility

“To clone or not to clone a human being” is no longer a fanciful question. Success in cloning first sheep, then also cows, mice, pigs, and goats, make it perfectly clear that a fateful decision is now at hand: whether we should welcome or even tolerate the cloning of human beings. If recent newspaper reports are to be believed, reputable scientists and physicians have announced their intention to produce the first human clone in the coming year, and efforts may already be underway as you read.

The media, gawking and titillating as is their wont, have been softening us up for this possibility, by turning the bizarre into the familiar. In the four years since the birth of Dolly the cloned sheep, the tone of discussing the prospect of human cloning has gone from “Yuk,” through “Oh?” and “Gee whiz,” to “Why not?” The sentimentalizers, aided by leading bioethicists, have downplayed talk about eugenically cloning the beautiful and the brawny or the best and the brightest. They have taken instead to defending clonal reproduction for humanitarian or compassionate reasons: to treat infertility in people who are said to “have no other choice,” to avoid the risk of severe genetic disease, to “replace” a child who has died. For the sake of these rare benefits, they would have us countenance the entire practice of human cloning, the consequences be damned.

But we dare not be complacent about what is at issue, for the stakes are very high indeed. Human cloning, though partly continuous with previous reproductive technologies, is also something radically new, both in itself and in its easily foreseeable consequences—especially when coupled to

powers for genetic “enhancement” and germ-line genetic modification that may soon become available, thanks to the recently completed Human Genome Project. I exaggerate, but in the direction of the truth: we are compelled to decide nothing less than whether human procreation is going to remain human, whether children are going to be made-to-order rather than begotten, and whether we wish to say yes in principle to the road that leads to the dehumanized hell of Brave New World.

Four years ago, I addressed this subject in these pages, defending and trying to articulate the moral grounds of our repugnance at the prospect of human cloning (“The Wisdom of Repugnance,” *TNR*, June 2, 1997; see also Leon R. Kass and James Q. Wilson, *The Ethics of Human Cloning*, 1998). Though I will (without apology) revisit some of my former arguments—events since then have only strengthened my conviction that cloning is a bad idea whose time should not come—my emphasis this time is more practical. To be sure, I would still like to persuade undecided readers that cloning is a serious evil, both in itself and in what it leads to. But I am more interested in encouraging those who oppose human cloning but who think we are impotent to prevent it; and I hope to mobilize them to support new and solid legislative efforts to stop it. In addition, I want readers who may worry less about cloning and more about impending prospects of germline genetic manipulation or other eugenic practices to realize the unique practical opportunity now available to us.

For we have here a golden opportunity to exercise some control over where biology is taking us. Cloning technology is discrete and well-defined, and requires considerable technical know-how and dexterity; we can therefore know by name many of the likely practitioners. The public demand for cloning is extremely low; most people are decidedly against it; nothing scientifically or medically important would be lost by banning clonal reproduction; alternative and non-objectionable means are available to obtain some of the most important medical benefits claimed for (non-reproductive) human cloning; commercial interests in human cloning are, for now, quite limited; and the nations of the world are actively seeking to prevent it. Now may be as good a chance as we will ever have to get our hands on the wheel of the runaway train now headed for a post-human world and to steer it toward a more dignified human future.

Before making my case, that we might proceed on common ground, I offer a brief synopsis of the state of the art.

What's Wrong with Cloning?

What is cloning? Cloning, or asexual reproduction, is the production of individuals who are genetically identical to an already existing individual. The procedure's name is fancy—somatic cell nuclear transfer—but its concept is simple. Take a mature but unfertilized egg; remove or inactivate its nucleus; introduce a nucleus obtained from a specialized (i.e., somatic) cell of an adult organism. Once the egg begins to divide, transfer the little embryo to a woman's uterus to initiate a pregnancy. Since almost all the hereditary material of a cell is contained within its nucleus, the re-nucleated egg and the individual into which it develops are genetically identical to the organism that was the source of the transferred nucleus.

An unlimited number of genetically identical individuals—a clone—could be produced by nuclear transfer. In principle, any person, male or female, newborn or adult, could be cloned, and in any quantity; and, because stored cells can outlive their sources, one may even clone the dead. Because cloning requires no personal involvement by the person whose genetic material is used, it could easily be used to reproduce living or deceased persons without their consent—a threat to reproductive freedom that has received relatively little attention.

Some possible misconceptions need to be avoided. First, cloning is not Xeroxing: the clone of Bill Clinton, though his genetic double, would enter the world hairless, toothless, and peeing in his diapers, like any other human infant. But neither is cloning just like natural twinning: the cloned twin will be identical to an older, existing adult; it will arise not by chance but by deliberate design; and the entire genetic make-up will be pre-selected by the parents and/or scientists. Further, the success rate, at least at first, will probably not be very high: the Scots transferred 277 adult nuclei into sheep eggs, implanted 29 clonal embryos, but achieved the birth of only one live lamb clone. For this reason among others, it is unlikely that, at least for now, the practice would be very popular (except among the Raelians!), and

there is little immediate worry of mass-scale production of multicopies. Still, for the tens of thousands of people who sustain over 300 assisted-reproduction clinics in the United States and already avail themselves of in vitro fertilization and other techniques, cloning would be an option with virtually no added fuss. Dr. Panos Zavos, the Kentucky reproduction specialist who has announced his plans to clone a child, claims that he has already received thousands of e-mailed requests from people eager to clone, despite the known risks of failure and damaged offspring. Should commercial interests develop in “nucleus-banking,” as they have in sperm-banking and egg-harvesting; should famous athletes or other celebrities decide to market their DNA the way they now market their autographs and nearly everything else; should techniques of embryo and germline genetic testing and manipulation arrive as anticipated, increasing the use of laboratory-assistance in order to obtain “better” babies—then, cloning, if permitted, could become more than a marginal practice simply on the basis of free reproductive choice.

What to think about this prospect? Nothing good. Indeed, most people are repelled by nearly all aspects of human cloning: the possibility of mass production of human beings, with large clones of look-alikes, compromised in their individuality; the idea of father-son or mother-daughter twins; the bizarre prospect of a woman bearing and rearing a genetic copy of herself, her spouse, or even her deceased father or mother; the grotesqueness of conceiving a child as an exact “replacement” for another who has died; the utilitarian creation of embryonic duplicates of oneself, to be frozen away or created when needed to provide homologous tissues or organs for transplantation; the narcissism of those who would clone themselves and the arrogance of others who think they know who deserves to be cloned; the Frankensteinian hubris to create human life and increasingly to control its destiny; men playing at being God. Almost no one finds any of the suggested reasons for human cloning compelling; almost everyone anticipates its possible misuses and abuses. And the popular belief that human cloning cannot be prevented makes the prospect all the more revolting.

Revulsion is not an argument; and some of yesterday’s repugnances are today calmly accepted—though, one must add, not always for the better. In crucial cases, however, repugnance is the emotional expression of deep wisdom, beyond reason’s power fully to articulate it. Can anyone

really give an argument fully adequate to the horror which is father-daughter incest (even with consent), or having sex with animals, or mutilating a corpse, or eating human flesh, or raping or murdering another human being? Would anybody's failure to give full rational justification for his revulsion at those practices make that revulsion ethically suspect? Not at all.

Let me suggest that our repugnance at human cloning belongs in that category. We are repelled by the prospect of cloning human beings not because of the strangeness or novelty of the undertaking, but because we intuit and feel, immediately and without argument, the violation of things that we rightfully hold dear. We sense that cloning represents a profound defilement of our given nature as procreative beings and of the social relations built on this natural ground. We also sense that cloning is a radical form of child abuse. In this age in which everything is held to be permissible so long as it is freely done and in which our bodies are regarded as mere instruments of our autonomous rational wills, repugnance may be the only voice left that speaks up to defend the central core of our humanity. Shallow are the souls that have forgotten how to shudder.

Yet repugnance need not stand naked before the bar of reason. The wisdom of our horror at human cloning can be partially articulated, even if that is finally one of those instances about which the heart has its reasons that reason cannot entirely know.

I offer four objections to human cloning: (1) it constitutes unethical experimentation; (2) it threatens identity and individuality; (3) it turns procreation into manufacture (especially when understood as the harbinger of manipulations to come); and (4) it means despotism over children and perversion of parenthood. Please note: I speak only about so-called reproductive cloning, not about the creation of cloned embryos for research (a subject to which I will have to return). The objections that may be raised against creating (or using) embryos for research are entirely independent of whether the research embryos are produced by cloning. What is radically distinct and radically new is reproductive cloning.

First, any attempt to clone a human being would constitute an unethical experiment upon the resulting child-to-be. In all the animal experiments, fewer than two to three percent of all cloning

attempts succeed. Not only are there fetal deaths and stillborn infants, but many of the so-called “successes” are in fact failures. As has only recently become clear, there is a very high incidence of major disabilities and deformities in cloned animals that attain live birth. Cloned cows often have heart and lung problems; cloned mice later develop pathological obesity; other live-born cloned animals fail to reach normal developmental milestones. The problem, scientists suggest, may lie in the fact that egg with the new somatic nucleus must reprogram itself in a matter of minutes or hours (whereas the nucleus of an unaltered egg has been prepared over months and years). There is thus a greatly increased likelihood of error in translating the genetic instructions, leading to developmental defects some of which will show themselves only much later. (Note well: these induced abnormalities may also affect the stem cells that scientists hope to harvest from cloned embryos. Lousy embryos, lousy stem cells.)

Nearly all scientists now agree that attempts to clone a human being carry massive risks of producing unhealthy, abnormal, and malformed children. What are we to do with them? Shall we just discard the ones that fall short of expectations? Considered opinion is today nearly unanimous, even among scientists: attempts at human cloning are irresponsible and unethical. We cannot ethically even get to know whether or not human cloning is feasible.

Second, cloning, if successful, would create serious issues of identity and individuality. The clone may experience concerns about his distinctive identity not only because he will be in genotype and appearance identical to another human being, but, in this case, because he may also be twin to the person who is his “father” or “mother”—if one can still call them that. Unaccountably, people treat as innocent the homey case of intrafamilial cloning—cloning of husband or wife (or single mother); they forget about the unique dangers of mixing the twin relation with the parent-child relation. (For that situation, the relation of contemporaneous twins is no precedent; yet even this less problematic situation teaches us how difficult it is to wrest independence from the being for whom one has the most powerful affinity.) Virtually no parent is going to be able to treat a clone of himself or herself as one does a child generated by the lottery of sex. What will happen when the adolescent clone of Mommy becomes the

spitting image of the woman Daddy once fell in love with? In case of divorce, will Mommy still love the clone of Daddy, even though she can no longer stand the sight of Daddy himself?

Most people think about cloning from the point of view of adults choosing to clone. Almost no one thinks about what it would be like to be the cloned child. Almost certainly, his or her new life will constantly be scrutinized in relation to that of the older copy. Even in the absence of unusual parental expectations for the clone—say, to live the same life, only without its errors—the child is likely to be ever a curiosity, ever a potential source of *déjà vu*. Unlike “normal” identical twins, a cloned individual—copied from whomever—will be saddled with a genotype that has already lived. He will not be fully a surprise to the world: people are likely always to compare his doings in life with that of his alter ego, especially if he is a clone of someone gifted or famous. True, his nurture and circumstance will be different; genotype is not exactly destiny. But one must also expect parental efforts to shape this new life after the original—or at least to view the child with the original version always firmly in mind. For why else did they clone from the star basketball player, mathematician, and beauty queen—or even dear old Dad—in the first place?

Third, human cloning would represent a giant step toward turning begetting into making, procreation into manufacture (literally, something “hand made”), a process already begun with in vitro fertilization and genetic testing of embryos. With cloning, not only is the process in hand, but the total genetic blueprint of the cloned individual is selected and determined by the human artisans. To be sure, subsequent development is still according to natural processes; and the resulting children will be recognizably human. But we here would be taking a major step into making man himself simply another one of the man-made things.

How does begetting differ from making? In natural procreation, human beings come together to give existence to another being who is formed exactly as we were, by what we are—living, hence perishable, hence aspiringly erotic, hence procreative human beings. But in clonal reproduction, and in the more advanced forms of manufacture to which it will lead, we give existence to a being not by what we are but by what we intend and design.

Let me be clear. The problem is not the mere intervention of technique, and the point is not that “nature knows best.” The problem is that any child whose being, character, and capacities exist owing to human design does not stand on the same plane as its makers. As with any product of our making, no matter how excellent, the artificer stands above it, not as an equal but as a superior, transcending it by his will and creative prowess. In human cloning, scientists and prospective “parents” adopt a technocratic attitude toward human children: human children become their artifacts. Such an arrangement is profoundly dehumanizing, no matter how good the product.

Procreation dehumanized into manufacture is further degraded by commodification, a virtually inescapable result of allowing baby-making to proceed under the banner of commerce. Genetic and reproductive biotechnology companies are already growth industries, but they will soon go into commercial orbit now that the Human Genome Project has been completed. “Human eggs for sale” is already a big business, masquerading under the pretence of “donation.” Newspaper advertisements on elite college campuses offer up to \$50,000 for an egg “donor” tall enough to play women’s basketball and having high enough SATs to get into Stanford; to no one’s surprise, at such prices there are many young coeds eager to help shoppers obtain the finest babies money can buy. (The egg and womb-renting entrepreneurs shamelessly proceed on the ancient, disgusting misogynist premise that most women will give you access to their bodies, provided that the price is right.) Even before the capacity

for human cloning is perfected, established companies will have invested in the harvesting of eggs from ovaries obtained at autopsy or through ovarian surgery, practiced embryonic genetic alteration, and initiated the stockpiling of prospective donor tissues. Through the rental of surrogate-womb services and through the buying and selling of tissues and embryos, priced according to the merit of the donor, the commodification of nascent human life will be unstoppable.

Finally, the practice of human cloning by nuclear transfer—like other anticipated forms of genetically engineering the next generation—would enshrine and aggravate a profound and mischief-making misunderstanding of the meaning of having children and of the parent-child relationship. When a couple normally chooses to procreate, the partners are saying yes to the emergence of new life in its novelty, are saying yes not only to having a child but also to having whatever child this child turns out to be. In accepting our finitude and opening ourselves to our replacement, we tacitly confess the limits of our control. Embracing the future by procreating means precisely that we are relinquishing our grip, in the very activity of taking up our own share in what we hope will be the immortality of human life and the human species. This means that our children are not our children: They are not our property, they are not our possessions. Neither are they supposed to live our lives for us, nor anyone else's life but their own. Their genetic distinctiveness and independence are the natural foreshadowing of the deep truth that they have their own and never-before-enacted life to live. Though sprung from a past, they take an uncharted course into the future.

Much mischief is already done by parents who try to live vicariously through their children. Children are sometimes compelled to fulfill the broken dreams of unhappy parents. But whereas most parents normally have hopes for their children, cloning parents will have expectations. In cloning, such

overbearing parents will have taken at the start a decisive step that contradicts the entire meaning of the open and forward-looking nature of parent-child relations. The child is given a genotype that has already lived, with full expectation that this blueprint of a past life ought to be controlling of the life that is to come. A wanted child now means a child who exists precisely to fulfill parental wants. Like all the more precise eugenic manipulations that will follow in its wake, cloning is thus inherently despotic, for it seeks to make one's children after one's own image (or an image of one's choosing) and their future according to one's will.

Lest you think me hyperbolic, consider concretely the new realities of responsibility and guilt in the households of the cloned. No longer only the sins but also the genetic choices of the parents will be visited on the children—and beyond the third and fourth generation—and everyone will know who is responsible. No parent will be able to blame nature or the lottery of sex for an unhappy adolescent's big nose, dull wit, musical ineptitude, nervous disposition, or anything else that he hates about himself. Fairly or not, children will hold their cloners responsible for everything, for nature as well as nurture. And parents, especially the better ones, will be limitlessly liable to guilt. Only the truly despotic souls will sleep the sleep of the innocent.

The arguments against cloning I have just presented I have prepared, necessarily, for adults, addressing my readers as fellow citizens faced with a momentous policy decision: shall we permit our neighbors to clone and be cloned? As I indicated when I began, I know that such moral and philosophical arguments may not be equal to the task. So let me put them to you again in a nutshell, asking you to think this time about cloning as if you were not a person being cloned but the younger duplicated copy. Even if you were a healthy clone, would you want to be constantly compared with the adult original in whose image you have been made? Wouldn't you want to have your own unique identity and an open-ended future, fully a surprise to yourself and the world? Are you happy being the copy of Mom, even though she drives you crazy? Are you pleased that everyone expects you to play chess just because you were cloned from Bobby Fisher? Don't you think that it is a form of child abuse for parents to attempt to determine in advance just exactly what kind of a child you are supposed to be? Do you want to live under the tyranny

of their biologically determined expectations? Knowing what you know, would you like to turn human procreation into manufacture, producing children as artifacts?

Answering the Critics

The defenders of cloning, of course, are not wittingly friends of despotism. Indeed, deaf to most other considerations, they regard themselves mainly as friends of freedom: the freedom of individuals to reproduce, the freedom of scientists and inventors to discover and devise and to foster “progress” in genetic knowledge and technique, the freedom of entrepreneurs to profit in the market. They want large-scale cloning only for animals, but they wish to preserve cloning as a human option for exercising our “right to reproduce”—our right to have children, and children with “desirable genes.” As some point out, under our “right to reproduce” we already practice early forms of unnatural, artificial, and extramarital reproduction, and we already practice early forms of eugenic choice. For that reason, they argue, cloning is no big deal.

We have here a perfect example of the logic of the slippery slope, and the slippery way in which it already works in that area. Only a few years ago, slippery slope arguments were used to oppose artificial insemination and in vitro fertilization using unrelated sperm donors. Principles used to justify those practices, it was said, will be used to justify more artificial and more eugenic practices, including cloning. Not so, the defenders retorted, since we can make the necessary distinctions. And now, without even a gesture at making the necessary distinctions, the continuity of practice is held by itself to be justificatory.

The principle of reproductive freedom currently enunciated by the proponents of cloning logically embraces the ethical acceptability of sliding all the way down: to producing children wholly in the laboratory from sperm to term (should it become feasible), and to producing children whose entire genetic makeup will be the product of parental eugenic planning and choice. If reproductive freedom means the right to have a child of one’s own choosing, by whatever means, it knows and accepts no limits.

Proponents want us to believe that there are legitimate uses of cloning that can be distinguished from illegitimate uses, but by their own principles no such limits can be found. (Nor could any such limits be enforced in practice: once cloning is permitted, no one ever need discover whom one is cloning and why.) Reproductive freedom, as they understand it, is governed solely by the subjective wishes of the parents-to-be. The sentimentally appealing case of the childless married couple is, on those grounds, indistinguishable from the case of an individual (married or not) who would like to clone someone famous or talented, living or dead. Further, the principle here endorsed justifies not only cloning but, indeed, all future artificial attempts to create (manufacture) “better” or “perfect” babies.

The “perfect baby,” of course, is the project not of the infertility doctors, but of the eugenic scientists and their supporters, who, for the time being, are content to hide behind the skirts of the partisans of reproductive freedom and compassion for the infertile. For them, the paramount right is not the so-called right to reproduce but what biologist Bentley Glass called, a quarter of a century ago, “the right of every child to be born with a sound physical and mental constitution, based on a sound genotype . . . the inalienable right to a sound heritage.” But to secure that right and to achieve the requisite quality control over new human life, human conception and gestation will need to be brought fully into the bright light of the laboratory, beneath which the child-to-be can be fertilized, nourished, pruned, weeded, watched, inspected, prodded, pinched, cajoled, injected, tested, rated, graded,

approved, stamped, wrapped, sealed, and delivered. There is no other way to produce the perfect baby.

If you think that such scenarios require outside coercion or governmental tyranny you are mistaken. Once it becomes possible, with the aid of human genomics, to produce or select for what some regard as “better babies”—smarter, prettier, healthier, or more athletic—parents will leap at the opportunity to “improve” their offspring. Not to do so will be socially regarded as a form of child neglect. Those who would ordinarily be opposed to such tinkering will be under enormous pressure to compete on behalf of their as yet unborn children—just as they scheme almost from birth on how to get their children into Harvard. Never mind that, lacking a standard of “good” or “better,” no one can really know whether any such changes will truly be improvements. Once the genetic genie is put into the bottle, there will be no way to get them out.

Proponents of cloning urge us to forget about the science fiction scenarios of laboratory manufacture or multiple-copied clones and to focus only on the sympathetic cases of infertile couples exercising their reproductive rights. But why, if the single cases are so innocent, should multiplying their performance be so off-putting? (Similarly, why do others object to people’s making money from that

practice if the practice itself is perfectly acceptable?) The so-called science fiction cases—like *Brave New World*—make vivid the meaning of what looks to us, mistakenly, to be benign. They reveal how what looks like compassionate humanitarianism is, in the end, crushing dehumanization.

Toward An Effective Ban

Whether or not they share my reasons, most people today share my conclusion: human cloning is unethical in itself and dangerous in its likely consequences, including the precedent it will establish for designing our children. Some reach this conclusion for their own good reasons, different from my own: concerns about distributive justice in access to eugenic cloning; worries about the genetic effects of asexual “inbreeding”; aversion to the implicit premise of genetic determinism; objections to the embryonic and fetal wastage that must necessarily accompany the efforts; religious opposition to “man playing God.” Never mind why: the overwhelming majority of our fellow Americans remain firmly opposed to cloning human beings. For us, the real questions are: What should we do about it? How can we best succeed? These questions should concern everyone eager to secure deliberate human control over the powers that could redesign our humanity, even if cloning is not the place they would choose to make their stand.

What we should do is to work to prevent human cloning by making it illegal. We should aim for a global legal ban if possible and a unilateral national ban at a minimum—and soon, before the fact is upon us. To be sure, legal bans can be violated; but we do curtail much mischief by outlawing incest, voluntary servitude, and the buying and selling of organs and babies. To be sure, renegade scientists may secretly undertake to violate such a law, but we can deter them both by criminal sanctions and monetary penalties, as well as by removing any incentive they have to proudly claim credit for their technological bravado. Such a ban on clonal baby-making, moreover, will not harm the progress of basic genetic science and technology. On the contrary, it will reassure the public that scientists are happy to proceed without violating the deep ethical norms and intuitions of the human community. It will also protect honorable scientists from public backlash against the brazen misconduct of the rogues. As

many scientists have publicly confessed, free and worthy science probably has much more to fear from a strong public reaction to a cloning fiasco than it does from a cloning ban, provided that it is judiciously crafted and vigorously enforced against those who would violate it.

Four states (Michigan, Louisiana, California, Rhode Island) have already enacted a ban on human cloning, and several others are likely to follow suit this year. Michigan, for example, has made it a felony, punishable by imprisonment for not more than 10 years or a fine of not more than \$10 million, or both, to “intentionally engage in or attempt to engage in human cloning,” where human cloning means “the use of human somatic cell nuclear transfer technology to produce a human embryo.”

Internationally, the movement to ban human cloning gains momentum. France and Germany have banned cloning (and germline genetic engineering), the Council of Europe is working to have it banned in all of its 41 member countries, and Canada is expected to follow suit. The United Nations, UNESCO, and the Group of Seven have called for a global ban on human cloning. Given the decisive actions of the rest of the industrialized world, the United States looks to some observers to be a rogue nation.

A few years ago, soon after the birth of Dolly, President Clinton called for legislation to outlaw human cloning and attempts were made to produce a national ban. Yet none was enacted, despite general agreement in Congress that it would be desirable to have one. Learning from this past failure, we can, I believe, do better this time around. Besides, circumstances have changed greatly in the intervening three years, making a ban both more urgent yet, happily, less problematic.

One might have thought that it would be easy enough to find clear statutory language for prohibiting attempts to clone a human being (and other nations have apparently not found it difficult). But, alas, in the last national go-around, there was trouble over the apparently vague term, “human being,” and whether it includes the early (pre-implantation) embryonic stages of human life.

Two major anti-cloning bills were introduced into the Senate in 1998. The Democratic bill (Kennedy-Feinstein) would have banned so-called reproductive cloning by prohibiting transfer of cloned embryos into a woman to initiate a pregnancy. The Republican bill (Frist-Bond) would have

banned all cloning by prohibiting the creation even of embryonic human clones. Both sides opposed “reproductive cloning,” the attempt to bring to birth a living human child who is the clone of someone now (or previously) alive. But the Democratic bill sanctioned creating cloned embryos for research purposes; the Republican bill did not. The pro-life movement clearly could not support the former, whereas the scientific community and the biotechnology industry opposed the latter; indeed, they successfully lobbied a dozen Republican senators to oppose taking a vote on the Republican bill (which even its supporters now admit was badly drafted). Because of a deep and unbridgeable gulf over the question of embryo research, we did not get the Congressional ban on reproductive cloning that nearly everyone wanted. It would be tragic if we again fail to produce a ban on human cloning because of its seemingly unavoidable entanglement with the more divisive embryo research issue.

To find a way around this impasse, several people (I among them) advocated a legislative “third way,” one that firmly banned only reproductive cloning but, unlike Kennedy-Feinstein, did not legitimate creating cloned embryos for research. This, it turns out, is hard to do. It is easy enough to state the necessary negative disclaimer that would set aside the embryo research question: “Nothing in this act shall be taken to determine the legality of creating cloned embryos for research; this act neither permits nor prohibits such activity.” It is much more difficult to state the positive prohibition in terms that are unambiguous and acceptable to all sides. To indicate only one difficulty: indifference to the creation of the embryonic clones coupled with a ban (only) on their transfer would place the federal government in the position of demanding the destruction of nascent life—a bitter pill to swallow even for pro-choice advocates.

Given both these difficulties and the imminence of attempts at human cloning, I now believe that what we need is an all-out ban on human cloning, including the creation of embryonic clones. I am convinced that all half-way measures will prove to be morally, legally, and strategically flawed, and—most important—that they will not be effective in obtaining the desired result. Anyone truly serious about preventing human reproductive cloning must seek to stop the process from the beginning.

Both our changed circumstances and the now evident defects of the less restrictive alternatives make this by far the most attractive and effective option. Here's why.

Creating cloned human children (“reproductive cloning”) necessarily begins by producing cloned human embryos. Preventing the latter would prevent the former, and prudence alone might counsel building such a “fence around the law.” Yet some scientists favor embryo cloning as a way of obtaining embryos for research or as sources of cells and tissues for the possible benefit of others. (This practice they misleadingly call “therapeutic cloning”—rather than the more accurate “cloning for research” or “experimental cloning”—in order to obscure the fact that the clone will be “treated” only to exploitation and destruction, and that any potential future beneficiaries and any future “therapies” are for now purely hypothetical). The prospect of creating new human life solely to be exploited in this way has been condemned on moral grounds by many people—including the *Washington Post*, former President Clinton, and many other supporters of a woman's right to abortion—as displaying a profound disrespect for life. Even those who are willing to scavenge so-called “spare embryos”—those products of *in vitro* fertilization made in excess of the people's reproductive needs, and otherwise likely to be discarded—draw back from creating human embryos explicitly and solely for research purposes. They reject outright what they regard as shameless exploitation and instrumentalization of nascent human life. In addition, others who are agnostic about the moral status of the embryo, see the wisdom of not needlessly offending the sensibilities of their fellow citizens who are opposed to such practices.

But even setting aside these obvious moral first impressions, a few moments of reflection shows why an anti-cloning law that permitted cloning of embryos but criminalized their transfer to produce a child would be a moral blunder. Here would be a law that was not merely permissively “pro-choice” but emphatically and prescriptively “anti-life.” While permitting the creation of an embryonic life, it would make it a federal offense to try to keep it alive and bring it to birth. Whatever one thinks of the moral or ontological status of the human embryo, moral sense and practical wisdom recoil from having the government of the United States on record as requiring the destruction of nascent life and, what is worse, demanding the punishment of those who would act to preserve it by (feloniously!) giving it birth.

But the problem with the approach targeting only reproductive cloning (that is, the transfer of the embryo to a woman's uterus) is not only moral, but also legal and strategic. In a word, a ban on only reproductive cloning will turn out to be unenforceable. Once cloned embryos are produced and available in laboratories and assisted-reproduction centers, it will be virtually impossible to control what is done with them. Biotechnical experiments take place in laboratories hidden from public view, and, given the rise of high stakes commerce in biotechnology, secretly concealed from the competition. As we have seen with *in vitro* embryos created to treat infertility, embryos produced for one reason can be used for any reason: today, "spare embryos" once created to begin a pregnancy are now used in research; tomorrow, clones created for research will be used to begin a pregnancy. Assisted-reproduction takes place within the privacy of the doctor-patient relationship, making outside scrutiny extremely difficult. Many infertility experts probably will obey the law, but others can and will defy it with impunity, their doings covered by the veil of secrecy that is the principle of medical confidentiality. Moreover, the transfer of embryos to begin a pregnancy is a simple procedure (especially compared with manufacturing the embryo in the first place), simple enough that its final steps could be self-administered by the woman who would thus take the doctor off the hook of having "caused" the illegal transfer. (I have in mind something analogous to Kevorkian's suicide machine, which was designed to enable the patient to push the plunger and the good "doctor" to evade criminal liability.)

Even should the deed become known, governmental attempts to enforce the reproductive ban would run into a swarm of moral and legal challenges, both to any efforts aimed at preventing transfer to a woman and—even worse—to efforts seeking to prevent birth after transfer has occurred. A woman who wished to receive the embryo clone would no doubt seek a judicial restraining order, suing to have the law overturned in the name of an alleged constitutionally protected liberty interest in her own reproductive choices. (The cloned child would be born before the legal proceedings were complete.) And, should an "illicit clonal pregnancy" be discovered, no governmental agency is going to compel a woman to abort the clone, and there will be an understandable storm of protest should she be fined or

jailed after she gives birth. There would even be sentimental opposition to punishing the doctor for violating the law—unless, of course, the clone turns out to be severely abnormal.

For all these reasons, the only practically effective and legally sound approach is to block human cloning at the start, at the production of the embryo clone. Such a ban can be rightly characterized not as interference with reproductive freedom, nor even as interference with scientific inquiry, but as an attempt to prevent the unhealthy, unsavory, and unwelcome manufacture of and traffic in human clones.

Some scientists, pharmaceutical companies, and bio-entrepreneurs will, of course, balk at this restriction. They want to get their hands on those embryos, and especially for their stem cells, those pluripotent cells that can, in principle, be turned into any cells and tissues in the body, potentially useful for transplantation to repair somatic damage. Embryonic stem cells need not come from cloned embryos, but, say the scientists, stem cells obtained from clones could be therapeutically injected into the embryo's adult "twin" without any risk of immunological rejection. It is the promise of rejection-free tissues for transplantation that has been, to date, the most successful argument in favor of experimental cloning. But new discoveries have shown that we can probably obtain the same benefits without the need for embryo cloning. The facts are much different than they were three years ago and the weight in the debate about cloning for research should shift to reflect them.

Numerous recent studies have shown that it is possible to obtain highly potent stem cells from the bodies of children and adults—from blood, bone marrow, brain, pancreas, and, most recently, from fat. Beyond all expectations, these non-embryonic stem cells have been shown to have the capacity to turn into a wide variety of specialized cells and tissues. (At the same time, early human therapeutic efforts with stem cells derived from embryos have produced some horrible results, the cells going wild in their new hosts and producing other tissues in addition to those in need of replacement. If an *in vitro* embryo is undetectably abnormal—as so often they are—the cells derived from it may also be abnormal.) Because cells derived from our own bodies are more easily and cheaply available than cells harvested from specially manufactured clones, we will almost surely be able to obtain from ourselves

any needed homologous transplantable cells and tissues, without the need for egg donors and cloned embryonic copies of ourselves. By pouring our resources into adult (or, more accurately, “non-embryonic”) stem cell research, we can also avoid the morally and legally vexing issues in embryo research. And more to our present subject, by eschewing the cloning of embryos, we make the cloning of human beings much less likely.

Last week an excellent federal anti-cloning bill was introduced in Congress, sponsored by Senator Sam Brownback in the Senate and Representative David Weldon in the House. Very carefully drafted, this legislation seeks to prevent the cloning of human beings at the very first step, by preventing somatic cell nuclear transfer to produce embryonic clones, and provides substantial criminal and monetary penalties for violating the law. The bill makes very clear that there is to be no interference with the scientific and medically useful practices of cloning of DNA fragments (molecular cloning), the duplication of somatic cells (or stem cells) in tissue culture (cell cloning), and whole-organism or embryo cloning of non-human animals. If enacted, this law would bring the United States into line with the already and soon to be enacted practices of many other nations. Most important, it offers us the best—indeed, the only realistic—chance we have to keep human cloning from happening, or happening much.

Getting this bill passed will not be easy. The pharmaceutical and biotech companies and some scientific and patient-advocacy associations will claim that the bill is the work of Bio-Luddites: anti-science, a threat to free inquiry, and an obstacle to obtaining urgently needed therapies for disease. Some feminists and pro-choice groups will claim that this legislation is really only a sneaky device for fighting *Roe v Wade*, and they will resist anything that might be taken even to hint that a human embryo has any moral worth. On the other side, some right-to-life purists, who care not how babies are made only so long as life not be destroyed, will withhold their support because the bill does not take a position against embryo twinning or embryo research in general.

These arguments, all of them wrong, must be resisted. This is most emphatically not an issue of pro-life versus pro-choice. It is not about death and destruction or about a woman’s right to choose. It

is only and emphatically about baby design and manufacture, the opening skirmish of a long battle with eugenics and against the post-human future. As such, it is an issue that does not and should not divide what is usually called “the left” and “the right”; indeed, there are people across the political spectrum who are coalescing in the efforts to stop human cloning. (The prime sponsor of Michigan’s comprehensive anti-cloning law is a pro-choice Democratic legislator.) Everyone needs to understand that—whatever we may think about the moral status of embryos—once embryonic clones are produced in the laboratories, the eugenic revolution will have begun. And we shall have lost our best chance to do anything about it.

As we argue in the coming weeks about this legislation, let’s be clear about the urgency of our situation and the meaning of our action or inaction. Scientists and doctors whose names we know, and probably many others we don’t know, are today working to clone human beings. They know the immediate hazards, but they are undeterred. They are prepared to screen and destroy anything that looks abnormal. They don’t care that they won’t be able to detect most of the possible defects. So confident are they in their rectitude that they are willing to ignore all future consequences of the power to clone human beings. They are prepared to gamble with the well-being of any live-born clones, and, if I am right, with a great deal more, all for the glory of being the first to replicate a human being. They are, in short, daring the community to defy them. Under these new circumstances, our silence can only mean acquiescence. To do nothing now is, in effect, to accept the responsibility for the deed and for all that follows predictably in its wake.

Shifting the Burden of Proof

I appreciate that a federal legislative ban on human cloning is without American precedent, at least in matters technological. Perhaps such a ban will prove ineffective; perhaps it will eventually be shown to have been a mistake. (If so, it could later be reversed.) But, if enacted, it will have achieved one overwhelmingly important result, in addition to its contribution to thwarting cloning: it would place the burden of practical proof where it belongs, requiring proponents to show very clearly what great

social or medical good can be had only by the cloning of human beings. Only for such a compelling case, yet to be made or even imagined, should we wish to risk this—or any future—major departure in human procreation. (The Brownback bill explicitly allows for such future reconsideration through its explicit provision mandating further study.)

We Americans have lived by and prospered under a rosy optimism about scientific and technological progress. The technological imperative has, on balance, probably served us well, though we should admit that there is no accurate method for weighing benefits and harms. Even when we recognize the unwelcome outcomes of technological advance, we Americans remain confident in our ability to fix all the “bad” consequences—whether by regulation or by means of still newer and better technologies. But there is very good reason for shifting the paradigm around, at least regarding those technological interventions into the human body and mind that will surely effect fundamental (and likely irreversible) changes in human nature, basic human relationships, and what it means to be a human being. Here we surely should not be willing to risk everything in the naive hope that, should things go wrong, we can later set them right again.

Some have argued that cloning is almost certainly going to remain a marginal practice, and that we should therefore permit people to practice it. But such a view is shortsighted. Even if cloning is rarely undertaken, a society in which it is tolerated is no longer the same society—any more than is a society that permits (even small-scale) incest or cannibalism or voluntary slavery. A society that allows cloning has, whether it knows it or not, tacitly said yes to converting procreation into manufacture and to treating children as pure projects of our will. Willy-nilly, it has said yes to the eugenic redesign of future generations. The principles thus legitimated could—and will—be used to legitimate the entire humanitarian superhighway to Brave New World.

The present danger posed by human cloning is, paradoxically, also a golden opportunity. In a truly unprecedented way, we can strike a blow for the human control of the technological project, for wisdom, prudence, and human dignity. The prospect of human cloning, so repulsive to contemplate, is the occasion for deciding whether we shall be slaves of unregulated innovation, and ultimately its

artifacts, or whether we shall remain free human beings who guide our technique toward the enhancement of human dignity. The preservation of the humanity of the human future is in our hands. Let us seize the occasion.