Stem Cells, Biotechnology, and Human Rights

Implications for a Posthuman Future

by Paul Lauritzen

If stem cell research led to therapies that changed the natural contours of human life, it would unsettle our ethical commitments, including the very notion of a human right, and encourage us to see the entire natural world, the human body along with it, as having the status only of material to be manipulated.

. . the final stage is come when man by eugenics, by prenatal conditioning, and by an education and propaganda based on perfect applied psychology, has obtained full control over himself. Human nature will be the last part of nature to surrender to man.

—C. S. Lewis, *The Abolition of Man*

This sudden shift from a belief in Nurture, in the form of social conditioning, to Nature, in the form of genetics and brain physiology is the great intellectual event, to borrow Nietzsche's term, of the late twentieth century.

—Tom Wolfe, *Hooking Up*

Paul Lauritzen, "Stem Cells, Biotechnology, and Human Rights: Implications for a Posthuman Future," *Hastings Center Report* 35, no. 2 (2005): 25-33.

I begin with passages from this unlikely pair of authors because, although they represent somewhat different times, differ in temperament, and differ extravagantly in personal style, they share an imaginative capacity to envision the possible consequences of modern technology. The technology that occasioned Lewis's reflections—"the aeroplane, the wireless, and the contraceptive"—may now seem quaint, but the warning he sounded about turning humans into artifacts was eerily prescient. Similarly, although he does not directly take up stem cell research, Tom Wolfe's reflections on brain imaging technology, neuropharmacology, and genomics are worth noting in relation to the future of stem cell research. In his inimitable way, Wolfe summarizes one view of the implications of this technology in the title of the essay from which the above passage comes. "Sorry," he says, "but your soul just died."

The point of beginning with Lewis and Wolfe is not that I share their dire predictions about the fate

to which they believe technology propels us; instead, I begin with these writers because they invite us to take an expansive view of technology. I believe that a broader perspective is needed in the ongoing public debate over stem cell research and that such a perspective is in fact beginning to emerge.[1] This is not to say that the traditional analysis that has framed much of the debate—analysis of autonomy, informed consent, and commodification, for example—is unhelpful; far from it. Nevertheless, much of the debate about stem cell research has focused on the enormously divisive issue of embryo status. Indeed, the debate about stem cell research seems almost choreographed, the steps all too familiar from the dance of abortion politics. The upshot is that much of the stem cell debate has been too narrowly focused and is repetitive and rigid.[2] For that reason, I urge that we consider stem cell research together with other forms of biogenetic research and therapy. Among other things, shifting the frame of reference in this way would require us to attend much more carefully to issues raised by adult stem cell work. Thus, instead of beginning with a question about embryo status, let us start with a question that has not typically been asked: Is adult stem cell work as unproblematic as it is often assumed to be?

Francis Collins's testimony before the President's Council on Bioethics in December 2002 suggests why this may be a productive question. Collins was asked to speak about "genetic enhancements: current and future prospects," and what he said about pre-implantation genetic screening is instructive. He noted that we are now able to screen both gametes and embryos, but because gamete screening is currently limited to sorting sperm for sex selection, he did not discuss it at length. He did, however, offer an interesting observation. Focusing on gametes, he says, is useful because it "isolates you away from some of the other compelling arguments about moral status of the embryo and allows a sort of cleaner discussion about what are the social goods or evils associated with broad alterations in the sex ratio and inequities in access to that technology."[3] In other words, the ethical issues raised by pre-implantation genetic screening are not limited to those brought about by the destruction of embryos required by PGD; indeed, screening gametes also raises serious moral issues, ones that might be eclipsed if we focus exclusively on embryos.

Might we not make a similar claim about embryonic and adult stem cell research? Adult stem cell research is often thought to sidestep some of the issues raised by work on embryonic stem cells, but in fact, does it not raise many of the most pressing issues surrounding embryonic stem cell research, only in a somewhat cleaner and more direct form?

Since the status of the embryo has received so much attention, questions about the implications of pursuing adult stem cell research have not been systematically asked or answered.

I believe it does, and that we need to attend to a whole range of issues related to embodiment, species boundaries, and human nature that are raised by recent developments in what Bruce Jennings has referred to as the "regime of biopower."[4] I will discuss two broad concerns posed by stem cell research and related biotechnological interventions. The first has to do with the prospect of transforming the contours of human life in fairly dramatic ways. The second has to do with our attitudes toward the natural world. As we move to change the meaning of human embodiment in fundamental ways, including the possibility of eroding species boundaries, we need to ask whether we are prepared to reduce the entire natural world to the status of an artifact. These concerns raise questions about the meaning of human rights in a posthuman future.

Embodiment, Human Rights, and Human Nature

To get a sense of what kinds of issues arise when we consider changing the contours of human existence, consider the notion that there is a species-typical pattern for human life that gives a determinate shape to our lives, a shape that has normative significance. On this view, there is a natural "trajectory" to human life, a natural ebb and flow from conception to death, that has implications for developing moral and political positions across a range of social issues, from reproductive technology to physician-assisted suicide. Yet stem cell research appears to challenge the idea of a natural trajectory to human life.

For example, Catherine Waldby and Susan Squier argue that the derivation of stem cells from early embryos demonstrates that embryos do not have one developmental trajectory. According to Waldby and Squier, stem cell research reveals the plasticity of early embryonic material, and in doing so demonstrates "*the perfect contingency* of any relationship between embryo and person, [and] the non-teleological nature of the embryo's developmental pathways." Indeed, they say, this research shows "that the embryo's life is not proto-

human, and that the biology and biography of human life cannot be read backwards into its moments of origin."[5] This claim may at first appear to be about embryo status, but Waldby and Squier mean to imply much more. In effect, they reject the notion that there is a meaningful trajectory to human life. What was killed when stem cells were first derived from the inner cell mass of a blastocyst, they say, was not a person, but a "biographical idea of human life, where the narrative arc that describes identity across time has been extended to include the earliest moments of ontogeny."[6]

That much more is at stake here than whether embryos are persons is clear if we attend to those who subscribe to the notion of a trajectory of a human life. Gilbert Meilaender, for example, has argued that our attitudes toward death and dying are shaped by our conception of what it means to have a life.[7] Indeed, according to Meilaender, two views of what it means to have a life and to be a person have been at war with each other over the past thirty years, and these views underwrite sharply different positions on practically every bioethical issue. On Meilaender's view, having a life means precisely that one is following a trajectory that traces a "natural pattern" that "moves through youth and adulthood toward old age and, finally, decline and death."[8] As he puts it, "to have a life is to be *terra animata*, a living body whose natural history has a trajectory."[9] Although Meilaender develops the notion of a natural trajectory primarily to address the issue of euthanasia, not stem cell research, talk of "natural history," "natural pattern," and "natural trajectory" is also relevant to stem cell research and related technologies. These new biotechnologies might fundamentally change our views about how and even whether a human life is constrained by the natural aging process. The question these biotechnologies raise, then, is whether such a change should be resisted.

There is little doubt that Meilaender would resist significant alteration of the natural trajectory, and other members of the President's Council on Bioethics, prominently Leon Kass and Francis Fukuyama, have raised similar concerns. But while those who oppose biotechnological interventions that may change the shape of the human life cycle are sometimes lumped together as "life cycle traditionalists," it is important to note that changing the trajectory of a life raises two distinct concerns.

The first is a more or less straightforward concern about the social consequences of altering the human life cycle. This concern is nicely illustrated by Francis Fukuyama's discussion of the social implications of dramatically lengthening the human life span in his book *Our Posthuman Future*. Suppose, he says, that regenerative medicine realizes its promise and the average life span expands from seventy to 110 years or more. What social dislocations can we expect? To explore this question, Fukuyama divides an aging cohort into two categories: the first category comprises people age sixty-five up to eighty-five; the second category is age eighty-five and older. The consequences of greatly expanding membership in these categories should give us pause, Fukuyama concludes, even if older people are much more vigorous than they are today. "For virtually all of human history up to the present," he writes,

> people's lives and identities were bound up either with reproduction—that is, having families and raising children—or with earning the resources to support themselves and their families. Family and work both enmesh individuals in a web of social obligations over which they frequently have little control and which are a source of struggle and anxiety, but also of tremendous satisfaction. Learning to meet those social obligations is a source of both morality and character.
>
> People in Categories I and II, by contrast, will have a much more attenuated relationship to both family and work. They will be beyond reproductive years, with links primarily to ancestors and descendants. Some in Category I may choose to work, but the obligation to work and the kinds of mandatory social ties that work engenders will be replaced largely by a host of elective occupations. Those in Category II will not reproduce, not work, and indeed will see a flow of resources and obligation moving one way: toward them.[10]

Other possible negative consequences include a growing burden on the environment due to overpopulation, a prolongation of adolescent immaturity, increased burdens on an already strained health care system, and other social costs.[11]

The second concern is often expressed in terms of a threat to human identity or what it means to be human, and although this concern frequently has a consequentialist cast, it comes in a largely non-consequentialist form as well. Walter Glannon has developed the most interesting form of the identity argument. According to Glannon, one direct consequence of significantly increasing the human lifespan would be to attenuate the relationship among past, present, and future mental states of a self and thus undermine the psychological grounds of personal identity. Since a sense of psychological connectedness between the present and the future is necessary to ground future-oriented desires, the inevitable erosion of a sense of connectedness that would come with a much longer life would, paradoxically, result in the extinction of the desire for a longer life. Without a reasonably strong sense of psychological connectedness to some future self, one would have little reason to take an interest in the potential projects of that person.

In Glannon's formulation, there would be biological continuity between a present and distant future

self, but psychological discontinuity: "there would be a divergence of our biology from our psychology."[12] Strictly speaking, it would be more accurate (and also more helpful) to say that a new biology would result in a new psychology. And, in fact, such a formulation is more consistent with Glannon's analysis, one aspect of which involves examining the formation-storage-retrieval process by which the brain maintains the equilibrium between remembering and forgetting that is critical to psychological unity. Discussing the function of activator and blocker CREB (cyclic AMP response element binary protein), Glannon writes:

> The function of this protein suggests that the requisite unity between these states can hold only for a limited period of time. Anticipation cannot extend so far into the future that it undermines memory of the past. By the same token, there cannot be so much stored memory of past events that it comes at the expense of our ability to anticipate and plan for the future. A break in this equilibrium would . . . undermine our ability to sustain long-term projects by breaking the unity of forward- and backward-looking attitudes necessary to ground these projects.[13]

In effect, the problem with increasing the lifespan is not that it causes psychology and biology to part company. Rather, changing the biology of human aging would profoundly change human psychology.

On one level, then, Glannon's concern about using stem cell therapies to significantly increase the human lifespan is a consequentialist worry about the psychological effects on humans of dissociating the present from the distant past or remote future. According to Glannon, we cannot rationally desire to lengthen the human life span because doing so would have disastrous consequences for our ability to undertake projects, accept responsibility for our past or future actions, or indeed, even care very much about "our" future. Notice, however, that there is a corollary to Glannon's maxim, as reformulated. If a new biology gives rise to a new psychology, it also gives rise to a new ethics. Or to put the point negatively, a new biology threatens our existing ethical commitments.

It is this kind of thought that animates the opposition of the life cycle traditionalists to biotechnologies that might alter the trajectory of a human life. When Leon Kass says that "many human goods . . . are inseparable from our aging bodies, from our living in time, and from the natural life cycle," he has this worry in mind.[14] It is also a central concern of *Our Posthuman Future*. Fukuyama suggests that we can grasp the threat biotechnology poses by noting the pervasiveness in modern moral discourse of the language of human rights, which is effectively the only available vocabulary for discussing human goods or ends. The most persuasive account of human rights, however, is framed in relation to the notion of a stable human nature.[15] According to Fukuyama, neither a religious conception of rights nor a positivist conception is viable. But once we recognize the relationship between human rights and human nature, we can give a very precise sense to the worry that we may be heading toward a posthuman future. The fear is that biotechnology will change the species-typical characteristics shared by all humans. If that happens, and if rights are tied to a conception of human nature that is in turn rooted in a biological reality, then biotechnology threatens the very basis of human morality as we know it.

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Perhaps the life cycle traditionalists put more weight on the notion of human nature than it can reasonably bear. Still, the connection between a relatively stable set of natural capacities and the claims of human rights is important. Indeed, the sharp social and political disagreements between the life cycle traditionalists and more left-leaning theorists can lead us to overlook a shared commitment to the importance of identifying a stable set of natural human capacities. For example, although Martha Nussbaum is suspicious of the language of human nature because she thinks it has been misused to defend oppressive social structures, her work both on the human capacity for care and compassion and on basic conditions of human flourishing relies centrally on the notion of natural human capacities that give rise to basic human rights.

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In a recent article, "Compassion & Terror," Nussbaum discusses Euripides' play *Trojan Women*, and explores the poet's sympathetic imagining of the fate of Trojan women and children in the course of developing her own reflections on the conditions and limits of a compassionate vision.[16] Although she is ultimately concerned about engendering such a vision for Americans in the face of terror—and particularly compassion for innocent women and children far from our

shores—her analysis is also thought provoking in light of the future of biomedicine.

Nussbaum notes that compassion requires a series of judgments involving another person's suffering or lack of well-being. We must judge that someone has been harmed, that the harm is serious, and that it was not deserved. Moreover, says Nussbaum, the Western tradition has stressed what could be called the "judgment of similar possibilities." In other words, "we have compassion only insofar as we believe that the suffering person shares vulnerabilities and possibilities with us."[17]

Surely, just about every person's catalog of human vulnerabilities includes illness, old age, and death. Yet arguably stem cell research may significantly transform the "human" experience of illness and death, at least for some. If stem cell therapies were to erode the notion of human nature, such as by blurring species boundaries, might they not also erode some basic moral sensibilities? Mary Midgley, for example, has argued that the notions of both human nature and human rights are importantly tied to membership in our species because rights are "supposed to guarantee the kind of life that all specimens of *Homo sapiens* need."[18]

Although Nussbaum avoids the language of human nature, it is precisely this sort of point that she highlights when she argues that compassion requires the belief that others share vulnerabilities and possibilities with us. Indeed, like Midgley, Nussbaum ties the notion of universal human rights to important human functions and capabilities. The basic idea, she says, is to ask what constitutes the characteristic activities of human beings: "What does the human being do, characteristically, as such—and not, say, as a member of a particular group, or a particular local community?"[19] Nussbaum notes that this inquiry proceeds by examining characteristic human activities in a wide variety of settings, and that comparing and contrasting human activities with the activities of non-human animals is helpful. So, too, is using myths and stories to compare humans and the gods. Such an inquiry, Nussbaum insists, helps us define limits that derive from membership in the natural world. Given the way that talk about "human nature" has been used in the past to exclude groups from full membership in the human moral community, there are good reasons to be careful about it. Nevertheless, unless we maintain some sense of nature that is not culturally constructed, we have no meaningful grounds for complaining about the lack of humane treatment of others.[20]

Indeed, although Nussbaum is exquisitely attentive to the wide variety of cultural interpretations of what it means to be human, she insists that a universal notion of human rights cannot be grounded unless one attends to human biology. Nussbaum's account of the human is neither ahistorical nor a priori; it is linked to an "empirical study of a species-specific form of life."[21] She begins her account of central human capabilities with the body:

> We live all our lives in bodies of a certain sort, whose possibilities and vulnerabilities do not as such belong to one human society rather than another. These bodies, similar far more than dissimilar (given the enormous range of possibilities) are our homes, so to speak, opening certain options and denying others, giving us certain needs and also certain possibilities for excellence. The fact that any given human being might have lived anywhere and belonged to any culture is a great part of what grounds our mutual recognitions; this fact, in turn, has a great deal to do with the general humanness of the body, its great distinctness from other bodies. The experience of the body is culturally shaped, to be sure; the importance we ascribe to its various functions is also culturally shaped. But the body itself, not culturally variant in its nutritional and other related requirements, sets limits on what can be experienced and valued, ensuring a great deal of overlap.[22]

Nussbaum's work is suggestive in another way, for she also notes how anxiety about our embodied existence, and the vulnerability that bodily existence entails, may be a profound impediment to compassion. I cannot do justice to the richness of Nussbaum's account of the emotional obstacles to compassion, but one aspect of her argument is worth noting here. In addition to analyzing the emotion of compassion, Nussbaum examines shame and disgust.[23] Drawing on psychological studies of these emotions, she notes that both appear to concern a sense of vulnerability that arises from the fact that we are embodied beings. A sense of inadequacy may lead to the emotion of disgust, for example, which in turn serves to distance the self from its own vulnerabilities.

The problem with this emotional dynamic is the almost universal human tendency to project features of disgust outward, onto others, as a way of shoring up one's own sense of stability and power. "Throughout history," says Nussbaum, "certain disgust properties—sliminess, bad smell, stickiness, decay, foulness—have repeatedly and monotonously been associated with, indeed projected onto, groups by reference to whom privileged groups seek to define their superior human status."[24] Whether it is Jews, women, homosexuals, untouchables, or blacks who have been labeled and treated as disgusting, the underlying anxiety appears to be "the intolerance of humanity in oneself."[25]

Of course, once we label the other as disgusting, it is difficult to see the shared vulnerability that underwrites compassion. That is why social hierarchies based on class, race, religion, ethnicity, or gender are such impediments to compassion: they lead one group to see itself as vastly superior to another group and thus erode the possibility of seeing the common humanity of the other. In such a situation, compassion easily withers. Here,

then, we see the danger to which Nussbaum's work draws our attention. To the degree that applications of stem cell research may erode a sense of common humanity, and to the degree that such applications may promote a social hierarchy rooted in genetics, they run the risk of blocking compassion and advancing intolerance.

Nussbaum's work identifying the judgments that underwrite compassion and tying a universalist account of rights to common human function and capabilities highlights what may be at stake with stem cell research and with a growing list of biotechnological developments that appear to destabilize the concept of human nature. It suggests why we need to think carefully about the social implications of a situation in which some humans have access to these technologies while other humans do not. At the very least, what Paul Rabinow describes as the biologicalization of identity around genetics (rather than gender and race), combined with the possibility of manipulating genetic identity for those with the money or power to do so, does not bode well for securing widespread compassion across economic or technological divides. Even more important, however, is the recognition that the very notion of human rights may ultimately rest on the idea (and what, until recently, has always been the reality) of a natural, relatively stable human condition.

The Natural World and Instrumentalization

A second, related worry is suggested by C.S. Lewis's warning about our unchecked hubris in seeking utter control over nature. It is not only human nature that we might destabilize, but the concept of "nature" generally and the appropriate treatment of any sentient life. Moreover, given how politically charged the concept of "human nature" is, we might do well, at least initially, to think about challenges to "human nature" by attending to views about "nature" generally, or the "nature" of non-human animals, or both.

These matters are not easily considered from within the typical frame of bioethics. Because the conceptual tools available in bioethics are not well suited to the task, I wish instead to turn to the cultural space that contemporary art provides for moral reflection on social issues posed by definitions of nature.

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Patricia Piccinini has explored the issues raised by contemporary biotechnology in her sculptures, photographs, and video installations.[26] Piccinini's exhibition, "Call of the Wild," which appeared at the Museum of Contemporary Art in Sidney, Australia, is like much of her work in that it demonstrates "an interest in the human form and its potential for manipulation and enhancement through bio-technological intervention."[27] Also, like her other work, this exhibition explores the relationship between human and non-human animals as it is mediated by biotechnology. One of the works in the exhibition, "Protein Lattice," is designed to provoke discussion about the possibility of using non-human animals to grow tissue and organs for transplant to humans. It takes as its point of departure the effort to grow human ears on a three-dimensional protein lattice on the back of mice. The installation is quite complex, involving television monitors on which the viewer sees rats trapped in a maze. At the same time, large images of young digitally enhanced human female models are juxtaposed with rats that have human ears on their backs. The rats surround some of the models; others serve as perches for the rats. In another work, "Still Life with Stem Cells," Piccinini presents a young girl playing with a disturbing but still oddly attractive collection of tissue and organs sculpted to look like human flesh and intended to be seen as tissue grown from stem cells.

Although Piccinini's work should certainly be taken on its own aesthetic terms, it is illuminating to think about her work in light of Kass's defense of the "wisdom of repugnance." The images in her art are simultaneously beautiful and repulsive. Indeed, the artist makes clear her own ambivalence about biotechnology and sees her work partly as a vehicle for reflecting on how human manipulation of "nature" is both inspirational and frightening.[28] Jason Scott Robert and Françoise Baylis have recently in-

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sisted that if claims about repugnance are to have moral force, then "the intuitions captured by the 'yuck' response must be clarified."[29] One strategy for seeking clarification would be to catalog our reactions to work such as Piccinini's and explore those reactions in a sustained way. For example, the contrast between the beautiful models and the ugly rodents in "Protein Lattice" invites reflection on our views of beauty in relation to what we find repulsive. Why do we recoil from hairless mice with ears grown on their backs, but not from models with breast and lip implants? Why are the mice deemed "unnatural" and repulsive, but not the contestants of the television show "Extreme Makeover," whose bodies are arguably more "unnatural" than those of the mice? Addressing questions of this sort would be a start toward the clarification Robert and Baylis seek.

Or consider the issue of crossing species boundaries as it has been depicted and explored in the "transgenic art" of Eduardo Kac.[30] Several years ago, Kac made national and international headlines with a public art installation that included "Alba, the GFP Bunny." Alba was an albino rabbit that had been genetically modified by the insertion of a gene from a jellyfish that gave it a green fluorescent protein (GFP), causing it to glow green under certain light. Transgenic art, said Kac, is "a new art form based on the use of genetic engineering to transfer natural or synthetic genes to an organism, to create unique living beings."[31]

Many people were outraged at Kac's creation, and many dismissed his work as a publicity stunt, but in fact, part of the point of the Alba project was to generate a public conversation on the cultural and ethical implications of genetic engineering. According to Kac, "the creation of a chimerical animal forces us to examine notions of normalcy, heterogeneity, purity, hybridity, and otherness."[32] Kac's work invites us to reflect on the implications of turning non-human animals into artifacts. To be sure, we have been doing that for a very long time. Still, it is worth asking whether creating unique living beings for our amusement or philosophical edification is morally justifiable.

That sort of question may be raised regularly in the literature on animal rights, but it is rarely asked in mainstream bioethics literature. Yet Peter Singer and others are surely right that non-human animals have natural capacities and needs and that they suffer when those capacities are thwarted and their needs go unmet. If we fail to notice this suffering, one reason is that we have ceased thinking of non-human animals as sentient beings and instead see them as machine-like. We thus fail to respect non-human animals precisely because we strip them of any determinate nature that might constrain our actions.

The significance of this point to stem cell research is that it may help us to see the reductionism of much contemporary research that understands the human body simply as material to be manipulated. Think, for example, of the metaphors that have dominated genomic research—the genome as a book or library, the mapping of the genome as conquering a wilderness—and how these metaphors encourage us to think of the body, to borrow Courtney Campbell's words, as "an exploitable natural resource whose contents are of more interest than the integrity of the whole."[33] Arguably we have lost any sense of the "integrity of the whole" in our disregard for non-human animals, and we may now be losing it about humans as well.[34]

Mere 'Nature'

Despite the overwhelming preoccupation with questions of embryo status, ultimately the fundamental question raised by stem cell research is not about the embryo. Instead, it is about the future toward which biotechnology beckons us. Most succinctly, the question is: Does contemporary biotechnology, including or perhaps especially stem cell research, open the door to a posthuman future? Waldby and Squier raise this question explicitly when they discuss the combination of genetic engineering and stem cell therapy. They suggest that xenotransplantation forces us to confront the prospect of transgressing species boundaries.[35] When a graft involves genetically engineered stem cells from another species, questions are raised not just about the ontological status of the graft recipient, but about the illnesses to which the biomedical technology is responding. Even the line between veterinary and human medicine may be called into question. "Stem cell technologies," Waldby and Squier write, "thus challenge both the temporal and spatial boundaries of human life, both our biography and our biological niche."[36]

Regrettably, with some notable exceptions, the ethical debate about stem cell research has not taken up in a sustained way what it would mean to pursue stem cell therapies that might significantly undermine the notion of a natural human life or erode the boundary between human and non-human species.[37] Since the status of the embryo has received so much attention, questions about the implications of pursuing adult stem cell research have not been systematically asked or answered. Given the potential for alleviating human suffering embedded in the prospects of stem cell research, it is not surprising that there appears to be widespread and largely uncritical acceptance of adult stem cell work. Nevertheless, if the promise of stem cell research is as revolutionary as is often claimed, we are going to need a much more expansive discussion of both embryonic and adult stem cell work than we have had.

I began this article with a passage from C.S. Lewis's essay "The Abolition of Man," and I end with another. Lewis writes:

> Now I take it that when we understand a thing analytically and then dominate and use it for our own convenience we reduce it to the

> level of 'Nature' in the sense that we suspend our judgements of value about it, ignore its final cause (if any), and treat it in terms of quantity. The repression of elements in what would otherwise be our total reaction to it is sometimes very noticeable and even painful: something has to be overcome before we can cut up a dead man or a live animal in a dissecting room.[38]

Although it is perhaps justifiable to reduce the world of nature to *mere* nature, I am inclined to agree with Lewis that something is lost when we do so. Re-reading "The Abolition of Man" in the context of debates about stem cell research, I was struck by the fact that the sort of dynamic Lewis describes in his essay is very close to that recorded in Jonathan Glover's impressive work, *Humanity: A Moral History of the Twentieth Century*.[39] Glover writes that "Human responses are the core of the humanity which contrasts with inhumanity. They are widely distributed, but to identify them with humanity is only partly an empirical claim. It remains also partly an aspiration." As Glover powerfully argues, morality must be rooted in human needs and values, and these needs and values are both rooted in "human nature" and grounded in human aspiration.

As we wrestle with issues of stem cell research, we ought to be conscious of what is at stake in the possibility of redefining either our natures or our aspirations, for as Glover makes clear, the inhumanity of humans is frightening and all too familiar.

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2. For exceptions to this generalization, see R.R. Faden et al., "Public Stem Cell Banks: Considerations of Justice in Stem Cell Research and Therapy," *Hastings Center Report* 33, no. 6 (2003): 13-27; H. Bok, K.E. Schill, and R.R. Faden, "Justice, Ethnicity, and Stem-Cell Banks," *The Lancet* vol. 364 (July 2004): 118-21.

3. "Testimony before the Presidents Council on Bioethics" (December 13, 2002). Available at: http://www.bioethics.gov/transcripts/dec02/session5.html.

4. Jennings defines the regime of biopower as the effort to make or remake the world in the realm of the biological. In relation to medicine, it refers to technologies that promise (or have delivered) significant interventions on the human body. See B. Jennings, "The Liberalism of Life: Bioethics in the Face of Biopower," *Raritan* 22, no. 4 (Spring, 2003): 133-46. On the theme of understanding life forms as manufactured products, see S. Krimsky, *Biotechnics and Society: The Rise of Industrial Genetics* (New York: Praeger, 1991).

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7. G. Meilaender, "*Terra es animata:* On Having a Life," *Hastings Center Report* 23, no. 4 (1993): 25-32.

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10. F. Fukuyama, *Our Posthuman Future* (New York: Farrar, Strous and Giroux, 2002), 70-71.

11. See W. Glannon, "Extending the Human Life Span," *The Journal of Medicine and Philosophy* 27, no. 3 (2002): 339-54.

12. W. Glannon, "Identity, Prudential Concern, and Extended Lives," *Bioethics* 13, no. 3 (2002): 276.

13. Ibid., 279-80.

14. L. Kass, "Ageless Bodies, Happy Souls," *The New Atlantis* 1 (2003): 12.

15. For an account of human rights that disputes this claim, see M. Ignatieff, "Human Rights as Idolatry," in *Human Rights as Politics and Idolatry*, ed. A. Gutman (Princeton, N.J.: Princeton University Press, 2001)

16. M.C. Nussbaum, "Compassion and Terror," *Daedalus* 128, no. 4 (2003): 10-26.

17. Ibid., 16. Diana Fritz Cates has criticized Nussbaum's account of compassion, particularly Nussbaum's insistence that compassion requires the judgment that the person suffers undeservedly. Cates notes that this condition is sharply at odds with the understanding of compassion in some Buddhist and Christian traditions. D.F. Cates, "Conceiving Emotions: Martha Nussbaum's Upheavals of Thought," *Journal of Religious Ethics* 31 (2003): 325-41. Shared possibilities/vulnerabilities can still be crucial, however. Nussbaum offers a subtly different account of the importance of shared vulnerabilities in *Upheavals of Thought* (New York: Cambridge University Press, 2001). See especially pp. 315-21. Thanks to Tom Schubeck for pressing me on this point.

18. M. Midgley, "Biotechnology and Monstrosity: Why We Should Pay Attention to the 'Yuk Factor,'" *Hastings Center Report* 30, no. 5 (2000): 9. See also M. Midgley, *Animals and Why They Matter* (Athens, Ga.: University of Georgia Press, 1983).

19. M.C. Nussbaum, "Human Capabilities, Female Human Beings," in *Women, Culture, and Development: A Study of Human Capabilities*, ed. M.C. Nussbaum and J. Glover (Oxford, U.K.: Clarendon Press, 1995), 72.

20. K. Soper, *What Is Nature? Culture, Politics and the Non-Human* (Cambridge, Ma.: Blackwell, 1995).

21. Ibid., 75.

22. Ibid., 76.

23. Nussbaum, *Upheavals of Thought*. See also M.C. Nussbaum, "'Secret Sewers of Vice': Disgust, Bodies, and the Law," in *The Passions of Law*, ed. S. Bandes (New York: New York University Press, 1999).

24. Nussbaum, *Upheavals of Thought*, 347.

25. Ibid., 350.

26. http://www.patriciapiccinini.net/, accessed December 30, 2004.

27. See R. Kent, "Fast Forward: Accelerated Evolution." Available at: http://www.patricia piccinini.net/.

28. P. Piccinini, "Artist Statement" (1999). Available at: http://www.patricia piccinini.net/, accessed December 30, 2004.

29. J.S. Robert and F. Baylis, "Crossing Species Boundaries," *American Journal of Bioethics* 3, no. 3 (2003): 1-13.

30. For a very interesting study of nonhuman animals in postmodern art, see S. Baker, *The Postmodern Animal* (London, U.K.: Reaktion Books, 2000).

31. "GFP Bunny," July 16, 2004, http://www.ekac.org/gfpbunny.html#gfpbunnyanchor, accessed December 30, 2004.

32. E. Kac, "GFP Bunny." For a discussion of Kac's work, see *The Eighth Day: The Transgenic Art of Eduardo Kac*, ed. S. Britton and D. Collins (Tempe, Ariz.: Arizona State University, 2003).

33. C. Campbell, "Source or Resource? Human Embryo Research as an Ethical Issue," in *Cloning and the Future of Human Embryo Research*, ed. P. Lauritzen (New York: Oxford University Press, 2001), 44.

34. W.S. Merwin captured the danger of this kind of reductionism in a poem entitled, "Dog": "Whatever he was to guard/Is gone. Besides, his glazed eyes/Fixed heavily ahead stare beyond you/Noticing nothing; he does not see you. But wrong:/Look again: it is through you/That he looks, and the danger of his eyes/Is that in them you are not there . . ." in *Green with Beasts* (London, U.K.: Hart-Davis, 1956).

35. Although he is not discussing stem cell research explicitly, Paul Rabinow's discussion of technological change during the last two decades is helpful. P. Rabinow, *French DNA: Trouble in Purgatory* (Chicago, Ill.: The University of Chicago Press, 1999), 13). See also L. Sharp, "The Commodification of the Body and Its Parts," *Annual Review of Anthropology* 29 (2000): 287-328.

36. Waldby and Squier, "Ontogeny, Ontology, and Phylogeny," 46.

37. Donna Haraway has argued that concerns about boundary crossing are reminiscent of racial and immigration discourses of an earlier era. "In the appeal to intrinsic natures," she writes, "I detect a mystification of kind and purity akin to the doctrines of white racial hegemony and U.S. national integrity and purpose." ("Mice into Wormholes," in *Cyborgs and Citadels*, ed. G.L. Downey and J. Dumit (Santa Fe, N.M.: School of America Research Press, 1997), 218).

38. C.S. Lewis, "The Abolition of Man," *The Abolition of Man* (New York: Macmillan, 1947), 81.

39. J. Glover, *Humanity: A Moral History of the Twentieth Century* (New Haven, Conn.: Yale University Press, 1999).