DRAFT (5/3/99)

"What Has the President Asked of NBAC?
On the Ethics and Politics of Embryonic Stem Cell Research"

Erik Parens, The Hastings Center

In November of 1998, President Clinton wrote to Dr. Shapiro, requesting that NBAC turn its attention to emerging issues in embryonic stem (ES) cell research. In that letter the President raises the general question concerning ES cell research in the current context of a Congressional ban on embryo research. He had of course made his interest in embryo research generally known several years earlier, in his response to the 1994 Human Embryo Research Panel's report. In that response the President said that while he could endorse research on embryos originally created by means of in vitro fertilization (IVF) for the purpose of reproduction, he could *not* endorse using IVF to create embryos for research. In early 1998, however, he indicated that he *could* endorse using somatic cell nuclear transfer (SCNT) to create embryos for research. Indeed in February of 1998 the administration announced that it could support a bill to prohibit using SCNT to produce children only if it met four conditions, the second of which was that the bill should "permit [SCNT] using human cells for the purpose of developing stem-cell …technology to prevent and treat serious and life-threatening diseases."[1]

Not only has the President made clear his interest in the questions concerning ES cell research in general and the creation of embryos for research in general, but the very first sentence of his November 1998 letter to Dr. Shapiro makes clear that he is also interested in the particular question concerning Advanced Cell Technology's (ACT's) work. He wrote, "This week's report of the creation of an embryonic stem cell that is part human and part cow raises the most serious of ethical, medical, and legal concerns." Despite the confusion about the fact that ACT claimed to have produced a hybrid *source* of

[1] Statement of Administration Policy (Concerning S. 1601 - Human Cloning Prohibition Act), February 9, 1998.

embryonic stem cells (rather than hybrid stem cells), it is clear the President thinks that SCNT involving a human somatic cell and an enucleated bovine ovum raises important ethical questions that he wants addressed. In a word, the President's letter to Dr. Shapiro raises a complex and interrelated set of issues concerning ES cell research and the creation of embryos as sources of ES cells.

In this paper I aim to delineate the issues raised by the President's request for a report from NBAC. By showing the interrelationships among those issues, I intend to show that an intellectually honest and adequate response to the President's request will acknowledge, if not fully address, each of them. First, how should policy makers view and talk about the relationship between ES cell research and embryo research? For example, is it reasonable to attempt to cordon off the public conversation about ES cell research from the public conversation about embryo research? Second, what is the current state of the policy conversation concerning embryo research? Specifically, what was the Human Embryo Research Panel's (HERP) argument for limited embryo research and how could it have been made more persuasively? Third, if in general it were acceptable to do limited research on embryos, then would the original *intention* of the maker of the embryo make a moral difference? For example, was it reasonable for the President to endorse research on "discarded" embryos, but to oppose research on "created" embryos? Fourth, if there were agreement that under carefully circumscribed conditions it is acceptable to create embryos for the purpose of research, then would it make a moral difference which *means* are used to create them? For example, was it reasonable for the President to endorse using SCNT to create embryos for research but not to endorse using IVF for the same purpose? Finally, if it were acceptable to use SCNT with human cells to produce embryos for research, then would it be acceptable to use SCNT with human and non-human cells for the same purpose? That is, how should policy makers view the ACT experiment that moved the President to write his letter to Dr. Shapiro?

1. The relationship between ES cell research and embryo research

The director of NIH, Harold Varmus, requested a legal opinion "on whether federal funds may be used for research conducted with human pluripotent cells derived from embryos [i.e., ES cells]…" In January of 1999 Dr. Varmus's counsel, Harriet Rabb, rendered an opinion. In it Ms. Rabb acknowledges that federal funding may not be used for "research in which a human embryo or embryos are destroyed." Thus she acknowledges that insofar as isolating ES cells requires destroying embryos, using federal funds to isolate ES cells is prohibited. According to Ms. Rabb's reading of the law, however, insofar as ES cells themselves are not embryos, research on them is not prohibited.[2]

Though according to the law ES cell research is not embryo research (and thus is eligible for federal funds), people speaking about these matters generally recognize that ES cell research and embryo research are inextricably entwined. For example, when HERP discussed embryo research that was acceptable for federal funding, one area it identified was "research involving the development of embryonic stem [ES] cells" (p. 10). In his letter to Dr. Shapiro, the President made it clear that he also understands how inextricably entwined are ES cell research and embryo research. He did so by suggesting that since the potential medical benefits of stem cell research are now less hypothetical than when the HERP wrote its report, he and the Congress might have to rethink the current ban on embryo research.

Indeed, not only are ES cells isolated by dismantling embryos, but it is also possible to transform ES cells into embryos by fusing ES cells with "disabled" blastocysts. In mice, ES cells have been fused with tetraploid host blastocysts to form embryos (and mature animals) that are "solely derived from the ES cells."[3] In the era of somatic cell nuclear transfer, however, when presumably all somatic cells can be transformed into embryos, it may seem that the capacity of ES cells to be so transformed does not make their relationship to embryos especially significant.

---

[2] January 15, 1999 Memo from Ms. Rabb to Dr. Varmus. Ms. Rabb wrote, "federally funded research that utilizes human pluripotent stem cells would not be prohibited by the HHS appropriations law prohibiting human embryo research, because such stem cells are not human embryos" (4).

[3] David Solter and John Gearhart, "Putting Stem Cells to Work," *Science* 283 (5 March 1999): 1468-70, at 1469.

But that view overlooks an important characteristic of ES cells. Whereas the public policy conversation about ES cells thus far has focused on their *pluripotentiality*, it has largely ignored their so-called "*immortality*"—or, more accurately, their capacity for "prolonged undifferentiated proliferation."[4] Because ES cells "grow tirelessly in culture, … they give researchers ample time to add or delete DNA precisely."[5] Because it is easier to make precise gene insertions in ES cells than it is to make such insertions in other kinds of cells (including zygotes[6] and somatic cells), ES cells are a powerful tool with which to produce germ-line interventions.

Thus ES cells and embryos are importantly related: with *relative* ease, ES cells can be genetically altered, those genetically altered ES cells can be fused with a disabled blastocyst to give rise to an embryo derived solely from the ES cells, and that embryo can give rise to a genetically altered organism. While there are large practical (not to mention ethical) obstacles in the way of using ES cells to produce germ-line alterations in humans,[7] Geron's Ethics Advisory Board (EAB) has quietly acknowledged that these obstacles may not be in place forever. After asserting that at this time Geron has no intention of using ES cells for reproductive purposes, the EAB states: "Should Geron consider initiating [activities involving genetic manipulation for reproductive purposes], the EAB will undertake the necessary ethical analysis."[8] That is, it is at least theoretically possible that in the future, the practical obstacles now in the way of using ES cells to produce genetically altered human embryos will no longer stand in the way. A comprehensive analysis of ES cell research should acknowledge this theoretical possibility. More to the point here, a careful analysis will avoid too quickly asserting that there's nothing special about the capacity of ES cells to be transformed into embryos.

---

[4] James A. Thomson et al. "Embryonic Stem Cell Lines Derived from Human Blastocysts," *Science* 282 (6 November 1998): 1145-47 at 1145.
[5] Antonio Regalado, "The Troubled Hunt for the Ultimate Cell," *Technology Review* 101, no. 4 (July/August 1998): 4-41, at 40.
[6] Jon W. Gordon, "Genetic Enhancement in Humans," *Science* 283 (26 March 1999): 2023-24, at 2024.
[7] On the practical and ethical obstacles, see Solter and Gearhart, p. 1469; Thomson et al., p. 1145; and Gordon, p. 2024.
[8] Geron Ethics Advisory Board, "Research with Human Embryonic Stem Cells:: Ethical Considerations," *Hastings Center Report* 29, no. 2 (1999): 31-36, at 34.

Ms. Rabb may be accurate to say that insofar as ES cells are not embryos, the letter of the law against embryo research does not apply. However, insofar as ES cells are harvested by destroying embryos and ES cells can in principle be used to produce not just embryos but altered embryos (i.e., embryos with added or deleted genes), and insofar as the spirit of the law aims to prevent such destruction and production, the spirit of the law does "apply."

Though I believe that the current Congressional ban against all embryo research is not in the public interest, I also believe that public policy makers are obliged to respect that ban or make the arguments to lift it. A legalistic end run around the spirit of the law is contrary to what we might call a basic rule of making public policy with regard to publicly funded scientific research: makers of such policy are obliged to speak openly and clearly about what that research entails. Insofar as research on human ES cells entails the destruction of embryos (and ultimately could entail their production), and insofar as many members of the public and their representatives feel passionately about such activities, the public should be involved in the public policy conversation about that research. Because topics like ES cell research are discussed in a language that is foreign to many members of the public, those who conduct those conversations are obliged to attempt to translate. An end run around the public will is not acceptable, no matter how great the potential medical benefits to be garnered. Medical progress is a very great good. But in a democracy, transparent and respectful public conversation may be an even greater good.

2. The State of the Policy Argument about Embryo Research

The major argument for doing embryo research is that it promises to reduce human suffering and promote well being, from helping overcome infertility to curing disease. The major argument against using embryos for research is that they have the moral status of persons and thus should not be destroyed, no matter how great the human benefit.

HERP rejected the argument that embryos have the same moral status as persons. "That is because of the absence of developmental individuation in the preimplantation embryo, the lack of even the possibility of sentience and most other qualities considered relevant to the moral status of persons, and the very high rate of natural mortality at this stage" (p.2). Though the Panel denied that embryos have the moral status of persons, it did state that "the human embryo warrants serious moral consideration as a developing form of human life" (p. 2).

In suggesting that the preimplantation embryo "warrants serious moral consideration," but not the same moral consideration as persons, HERP suggested a way between two radical alternatives. Again, the Panel could not accede to the view that embryos are persons. Indeed, that view is persuasive only if one proceeds from a particular set of beliefs that citizens in a democratic regime are not obliged to accept. Nor, however, could the Panel accede to the view that embryos are mere property. That view is persuasive only if one chooses to ignore that *if* someone wanted to transfer these entities to a uterus, they might become human beings. In light of the determination that embryos have an intermediate moral status (neither persons nor property), HERP suggested that appropriate respect could be showed for embryos by limiting the time frame in which research is done on them and by limiting the purposes to which they can be put. [9]

In my estimation, HERP's line of argument is as reasonable as any policy group is likely to make. Nonetheless, both friends and foes of embryo research have raised objections to it. Next I would like to suggest how the portion of NBAC's document dealing with embryo research might respond to some of those objections, thereby making for a clearer and perhaps more persuasive argument. As I have already stated, my view is that federal money should be used to fund such research if and only if a majority of the public's representatives understands what is at stake and has been persuaded by the arguments.

[9] Bonnie Steinbock, "Ethical Issues in Human Embryo Research," Background paper for HERP.

Objections to and concerns about HERP's line of argument. Alta Charo has suggested that the Panel's report is significantly flawed insofar as it claims to have made a determination of the moral status of the embryo. According to Charo, "it is impossible for a governmental body to determine the moral status of the embryo."[10] In one sense, that is surely true. No body, governmental or otherwise, can "determine" the moral status of the embryo in the way we can, say, determine the time it will take an object dropped from a given height to reach the ground. There is no "correct" answer to the question, What is the moral status of the embryo? Human beings can't determine—in the sense of *discover* through simple empirical investigation —what the moral status of embryos is.

In another sense, however, government bodies can't *not* determine the moral status of embryos. They have to make a determination, in the sense of *implicitly or explicitly make an interpretation of* their moral status. What we think it is appropriate to do with things is to a large extent a function of what we think they are. When for example an advisory body makes a policy concerning the disposition of embryos, it has to rely on an interpretation of—it has to make a "determination" about—their moral status. If an advisory body wants to make recommendations about how to treat embryos, it can choose among many interpretations of what they are. However, no matter how keenly such a body might be aware that the interpretation it relies on is tentative and potentially divisive, it can not choose not to choose an interpretation. Thus, pace Charo, I would suggest that the Human Embryo Research Panel should *not* have "abandoned any effort to determine the moral status of the embryo" (Charo, p. 18). The Panel should not have attempted to avoid making a determination because no such attempt could succeed. Indeed, while the Panel technically may have been correct to assert that it "was not called upon to decide which of [of the many views on the moral status of the embryo] is *correct*," it should have more clearly acknowledged that it nonetheless had to base its recommendations on its *interpretation* of the embryo's moral status.

[10] Alta Charo, "The Hunting of the Snark: The Moral Status of Embryos, Right-to-Lifers, and Third World Women," 6 Stanford Law & Policy Review 11 (1995).

The Panel's technically accurate but unfortunately worded assertion about not being called upon to decide which view of the moral status was correct, was reinforced by the also technically accurate but unfortunately worded assertion that it "conducted its deliberations in terms that were independent of a particular religious or philosophical perspective." Someone in a hurry might have missed the work that "particular" does in that sentence. The sentence could be read to mean that commissioners thought they were somehow free of *all* philosophical and religious commitments, just offering commitment-free analysis from on high. That is clearly not what the commissioners meant. The report was free of particular religious commitments in the sense that it did not appeal to a particular biblical tradition or religious authority to support its interpretation of the moral status of embryos. Similarly, it was free of particular philosophical commitments in the sense that it did not appeal to any particular philosophical "school" such as deontology or utilitarianism. On the other hand, however, the very idea of democracy has deep roots in commitments that are arguably religious and surely philosophical. Although, for example, the idea that all human beings are "created equal" can be given a philosophical account, its religious roots are obvious. Moreover, the idea that the government should, to the extent possible, allow a plurality of life projects to flourish is rooted in fundamental philosophical commitments.

NBAC should try to be clearer than HERP was about the difference between *particular* philosophical and religious commitments that are not essential to the idea of democracy and more general philosophical (and arguably "religious") commitments that undergird the idea of democracy itself. The so-called pluralistic approach does not come from nowhere; it is not value-free; on the contrary, it grows out of commitment to and tradition of giving reasons that are accessible to all. Rather than emphasize that no particular philosophy was appealed to, NBAC should specify some of the essential democratic and philosophical commitments to which it did appeal—such as the commitment to giving reasons that do not decisively depend upon particular schools of religion or philosophy.

This nation's founders of course understood that sometimes disagreements about policy matters would be rooted in deep religious and philosophical commitments. The founders thought that such

disagreements would have to be resolved through the political process. Even if the reality of political and economic power is often otherwise, in principle, those arguments prevail that persuade the majority. In accordance with that process, the government will sometimes have to implement determinations that conflict with the fundamental values of some citizens. It is utopian to imagine that at all times all deep commitments will be able to flourish. As John Rawls puts it: "there is no social world without loss: that is, no social world that does not exclude some ways of life that realize in special ways certain fundamental values."[11] Inevitably, some citizens will sometimes feel the pain of such exclusion. We are all obliged to notice and try to respond to the pain of that loss.[12] Yet as Rawls points out, there is no social world without it.

The founders believed, however, that those whose values were not embraced in a given case could take solace in understanding that the procedure that produced that result was rooted in a shared fundamental value: the value of relegating such disagreements to a public arena in which those with the most persuasive arguments prevail. The founders were aware that history is strewn with examples of bad arguments persuading the majority. But in a democracy the remedy for bad arguments is not religious fiat; it is better arguments.

Again, because one cannot avoid making an interpretation of the moral status of embryos, in a democracy one has to instead give reasons to support one's interpretation and show how one's interpretation recognizes competing interpretations to the greatest extent possible. Proponents of the "intermediate status" view cannot claim to be without an interpretation of the moral status of embryos; they should be clear and open about that and they should feel no need to apologize for it. They should acknowledge the pain and/or frustration that those holding minority views will experience. Advocates of the "intermediate moral status" interpretation can and should point to how their interpretation acknowledges minority claims: acknowledging advocates of the embryos-are-persons view, limits are placed on the time frame in which embryos can be used for research as well as on the purposes to which

[11] John Rawls, *Political Liberalism* (New York: Columbia University Press, 1993), p. 197.

they can be put; acknowledging those who hold the embryos-are-property view, much, but not all research is allowed.

It was perhaps because HERP was not sufficiently clear about how it understood the intermediate status of embryos that another objection was leveled against its report. One observer suggested that it is incoherent to say that we can both "respect" embryos and accept their dismemberment in the research process.[13] That would be true if, for example, one assumed that embryos are persons and thus deserving of the same respect as persons. But if, as did HERP, one conceives of the moral status of embryos differently, then respecting them differently could be altogether coherent. Again, what we think we should do with things—and how we think we should respect things—is a function of what we think they are. For example, we think we can consistently accord cadavers the respect they are due and allow medical students under carefully circumscribed conditions to dismember them. If one accepts the middle way interpretation of the moral status of embryos, then limited (but appropriate) respect for them is consistent with limited research on them.

3. The "discarded-created" distinction: on the intentions of embryo makers.

Let us assume NBAC has successfully argued that, in general, federal funding should be available for research on embryos under certain circumstances and for certain purposes. The next question is, should the intention of the maker of an embryo at the time of its creation make a difference for how we evaluate the ethical acceptability of doing research on it? Thoughtful people have suggested that there is an important moral difference between doing research on embryos originally created with the intention of using them for reproduction and doing research on embryos originally created with the intention of using them for research. The former class of embryos becomes available for research only when it is discovered that members of it are no longer needed for reproduction; only then are they "discarded" and only then do they become available for research. The latter class of embryos would be

[12] Though earlier I disagreed with Charo's "Hunting the Snark," here I am indebted to that same essay.

"created" specifically for the purpose of research. According to this view, doing research on embryos originally created for reproduction ("discarded") is far easier to justify than is doing research on embryos originally created for research.

There is of course a large practical problem with investing much intellectual capital in the created-discarded distinction: it is altogether unclear how oversight bodies will be able to discern the intentions of embryo makers. Though regulations could perhaps impose some limits on the number of embryos allowed to be created in the IVF context, there will always be room for creative overestimation of the need for embryos for reproduction. As HERP reported, the Australian Senate Select Committee that took up these issues wrote that "any intelligent administrator of any IVF program can, by minor changes in his [sic] ordinary clinical ways of going about things, change the number of embryos that are fertilized" (p. 56).

While members of a bioethics commission need to take into account such practical concerns, it is ethical concerns, however, that should drive their analysis. One ethical intuition that seems to motivate the discarded-created distinction is that whereas the act of creating an embryo for reproduction is respectful in a way that is commensurate with the moral status of embryos, the act of creating an embryo for research is not. Because the first class of embryo was brought into being under moral circumstances—because the intention of its makers were moral—research on them is deemed acceptable.[14] Because the second class of embryo was *not* brought into being under equally moral circumstances—because the intention of its makers were not equally respectable—research on them is deemed unacceptable. According to this view, the moral status of the embryo (and thus the moral status of research on it) is a function of the intention of its maker. The problem with this intuition is that it is difficult to see what the intention of the maker of something has to do with the moral status of that thing once it has come into being. We do not think, for example, that the moral status of children is a function

[13] Daniel Callahan, "The Puzzle of Profound Respect," *Hastings Center Report* 25, no. 1 (1995): 39-41.

of their parents' intention at the time of conception. If what something *is* obliges us to treat it some ways and not in others, then how it *came into being* is usually thought to be morally irrelevant.

It may be that another and closely related motivation for taking the discarded-created distinction seriously, is the intuition that whereas in creating embryos for reproduction scientists are helping nature along toward a natural purpose, in creating embryos for research they are not. According to this intuition, whereas helping nature along is praiseworthy, doing something different from what happens "naturally" is not. In other words, whereas intending to create embryos for the purpose of reproduction is *natural*, intending to create them for the purpose of research is *artificial*. The problem with this intuition is that both projects (reproduction and research) entail the intentional creation of embryos in the highly "artificial" context of an IVF clinic. Thus it is difficult to see why policy makers should give credence to the natural/artificial distinction in attempts to delineate the moral difference between doing research on embryos originally intended for reproduction and those originally intended for research.

But perhaps what motivates the distinction is not a view about the intention or purpose of the maker of the embryo at the time of creation, but, more pragmatically, a view about what to do with embryos once they are already here. Perhaps the motivation for the distinction is simply the view that it would be wasteful *not* to use embryos that are already here (regardless of their origin). Whereas this view about wastage may support the claim that using embryos that are already here is ethically acceptable, it sheds no light on whether creating embryos for research is acceptable. The holder of this view assumes that creating embryos for research is wrong. But that assumption is rejected by those who hold the "intermediate moral status" view of embryos. That is, by itself, the intuition about wastage cannot alone justify the created-discarded distinction.

It may be that another thing at work in taking the distinction seriously is the intuition that the good of helping an infertile couple become pregnant is *greater than* the good of doing embryo research.

---

[14] "For most people it is the intention to create a child that makes the creation of an embryo a moral act." George Annas, Arthur Caplan, and Sherman Elias, "The Politics of Human-Embryo Research—Avoiding Ethical Gridlock," *New England Journal of Medicine* 554, no. 20 (May 16, 1996): 1329-32 at 1331.

But insofar as most of that research aims at helping *many* couples overcome infertility and become pregnant, it is difficult to see why that good is of lesser moral weight than the good of helping an individual couple. If the good of helping an individual couple become pregnant is great enough to justify the creation of embryos, then it would seem that the good of helping many couples to become pregnant is an equally strong justification.

Another thing that clearly motivates taking the distinction seriously is a concern about instrumentalization.[15] The concern is that, different from creating embryos for the purpose of reproduction, creating them for the express purpose of research could make us increasingly think of them as mere means to our ends rather than as ends in themselves. In one sense, this concern seems off the mark to those who hold an "intermediate status" view of embryos. While it is clear to holders of that view that embryos deserve respect commensurate with their intermediate moral status, it does not seem to them that embryos are "ends in themselves" the way persons are. Nonetheless, holders of the intermediate status view, too, would be concerned if creating embryos in the research context lead to a more general degradation of the respect due to entities that, if transferred, might become human beings. Thus, the worry about instrumentalization strikes me as worthy of further reflection.

A last thing that may motivate the created-discarded distinction is a concern that allowing the creation of embryos for research will increase pressure on women to donate ova for that purpose. It is interesting to note, however, that the Canadian Commission suggested that *not* allowing the creation of embryos for research would increase pressure on women; the Canadians suggested that allowing researchers to create embryos for research would *decrease* pressure on women in IVF programs to donate unused eggs or zygotes.[16] Though the Canadian Commission's strategy might decrease pressure on women who already have undergone IVF procedures, there remains the question concerning when and where else researchers will get the eggs they need to create embryos. It is entirely plausible that that perceived need will create subtle or not-so-subtle pressure on women to donate eggs. Thus, like the

[15] HERP, p. 53.

concern about instrumentalization, the concern about pressure on women is not unreasonable. Unlike the concern about instrumentalization, however, the concern about pressure on women, might be mitigated by the use of non-human ova (which will be pursued below in Part 5).

In Part 2 above I attempted to suggest reasons to suppose that the way we show respect for embryos commensurate with the middle-way interpretation of their "moral status," is by placing limits on the time frame in which researchers work on them and on what researchers can do with them. In this part (3) I have suggested reasons to believe that the attempt to show respect for embryos by means of distinguishing between the intentions of the makers of embryos is fraught with practical and conceptual difficulties. Indeed, neither the British Human Fertilisation and Embryology Authority (1993), the Canadian Royal Commission on New Reproductive Technologies (1993), nor the US Ethics Advisory Board (1979) put much stock in the distinction; all three approved the fertilization of ova for research purposes.[17] I have also, however, tried to signal the concerns about instrumentalizaion and pressure on women that deserve further consideration.

4. IVF v. SCNT: On the different means used to create embryos.

If the *intentions* of the maker of embryos do not make a moral difference (or at least do not make the sort of clear moral difference suggested by some proponents of the created-discarded distinction), then do the *means* used to make the embryo make a moral difference? This question arises from the observation that whereas IVF as a means to achieve the purpose of reproduction is widely accepted, SCNT as a means to achieve the same purpose has been widely rejected.

Aside from concerns about risk, the rejection of "reproductive cloning" is based upon a widespread worry about the psychological consequences of producing children with means that replicate

[16] HERP, p. 56.
[17] HERP, p. 53; the state of Victoria, Australia permits fertilization for research purposes through the first 24 hours following fertilization.

an extant genotype rather than creating a new one.[18] However, since here we are talking about using SCNT for research (*not* reproduction), worries about reproducing an extant genotype (worries about psychological consequences for children) are not relevant. If in general we accept the limited creation of embryos for research, and if by definition the harms-to-children concerns don't apply to using SCNT to produce embryos for research, then is there another reason to object to or worry about using SCNT for that purpose?

One reason to object to using SCNT to produce embryos for research might be that SCNT will significantly increase the supply of embryos—and thereby decrease respect or awe before them. This worry overlooks two facts. First, both "traditional" IVF and SCNT are limited by the number of available human ova; I am not aware of a reason to think that that number is going to grow fast. Second, at this point, it is more difficult to produce embryos with SCNT than with IVF; it is not reasonable to assume that researchers will rush to use SCNT. Thus it does not seem reasonable to worry that SCNT will significantly increase the number of, and thereby decrease the respect accorded, embryos in general.

There may, however, be another more substantial worry in this context. This is the worry that since embryos created by means of SCNT are not genetically unique[19], and since genetic uniqueness is one of the valued properties of embryos created by IVF, embryos created by means of SCNT may be respected less than those created by IVF. That is, one might worry that producing embryos by means of SCNT will contribute to an instrumental or cheapened view of them.

This worry strikes me as important, and worthy of further reflection. To put it in "humanistic" terms, it is not implausible that the more we imagine ourselves to be the masters of nature, the more we will forget our fundamental indebtedness to nature. While I believe that that worry deserves further

[18] *Cloning Human Beings:Report and Recommendations of the National Bioethics Advisory Commission.*
[19] To be more precise, the *nuclear* DNA of embryos produced by SCNT is not unique; because of the mitochondrial DNA contributed by the enucleated ovum, an embryo produced by SCNT *is* genetically unique. This minor technical point doesn't change the fact that many may worry about the moral significance of replicating (nuclear) genotypes, even in the research context.

reflection, I acknowledge that it is not obvious that such an

increasingly instrumental attitude must emerge. We have been able to maintain our awe before IVF embryos created for the purpose of reproduction. There is no prima facie reason why we can't also maintain awe before SCNT embryos created for the purpose of doing research to promote human well being more generally.

5. Using SCNT to create nonviable, hybrid, "entities."

As I observed in the beginning of this paper, the first line of President Clinton's letter requesting an NBAC report mentions ACT's attempt to use SCNT to create hybrid "entitites." As we noticed (in Part 1) above, in the current context of a ban on embryo research, much is at stake in whether we call ACT's entities "hybrid *embryos*" or something else, such as "embryonic cells."[20]

People at ACT have suggested that we should not call their entities "embryos." But if, as ACT's CEO, Michael West, has said, we do not know what ACT's "entities" are, then how can we say they are not embryos? And if we do know that ACT's entities are not embryos (and thus not capable of implanting in a uterus), then why do researchers say that they would not transfer such entities in an experiment to see if they would implant?

I would suggest that to most speakers of English who followed the Dolly story, if you take a sheep somatic cell and fuse it with an enucleated sheep egg, you get a sheep embryo. If for some reason that embryo is not viable, we would call it a nonviable sheep embryo. To most speakers of English, if you take a human somatic cell and fuse it to an enucleated cow egg, you get a hybrid embryo. If for some reason that hybrid embryo is not viable, most would call it a nonviable hybrid embryo.

Once again, in deference to what above I called a basic rule of public conversation, I would recommend that we call ACT's entities *hybrid embryos.* (If it becomes clear that these hybrid embryos are not viable, we should call them *nonviable hybrid embryos*.) Though that requires facing hard questions about the production of embryos by means of SCNT for the purpose of research, facing those

questions is preferable to violating the obligation to engage in public conversation in terms that attend to rather than obfuscate the concerns of many citizens.

If we can agree that we should call ACT's entities hybrid embryos, then what ethical questions arise? The question concerning the risk that results from mixing mitochondrial DNA from one species and nuclear DNA from another is large. Whereas, for example, mitochondrial DNA from a common chimpanzee, a pigmy chimpanzee, or a gorilla is compatible enough with human nuclear DNA for oxidative phosphorylation to occur, mitochondrial DNA from orangutans, New-World Monkeys, and lemurs has proven not compatible with human nuclear DNA.[21]

If the risk question were resolved, the more complicated question concerning the ethics of creating hybrid organisms would remain. In the past, anxiety about hybridity has rested on deep but utterly indefensible intuitions: perhaps the best example is the "intuition" that "miscegenation" is criminal. Yet, it would seem both practically and theoretically unwise for a bioethics commission to dismiss a general worry with such a long and powerful history. For example, it was so obvious to HERP that producing chimeras is "unacceptable" that they did not think it necessary to give reasons for that decision. In principle at least, it would seem that while some "anxiety" may harbor nothing more than ignorance, some may harbor "insight." This question concerning hybridity deserves further exploration.

In the meantime, fortunately for NBAC, ACT's work does not entail the production of "hybrids" in the way that seems to motivate most of the worry about hybridity. If concerns about hybridity are really about the production of "chimeras," and if ACT only wants to use an enucleated cow egg as a way station for human nuclear DNA destined to become ES cells, then concerns about hybridity would in general appear not to apply. Insofar as we are willing to place genes from one species into another to

---

[20] Nicholas Wade, "Researchers Claim Embryonic Cell Mix of Human and Cow," *New York Times* (November 12, 1998).

[21] Kenyon, L. and CT Moraes, "Expanding the Functional Human Mitochondrial DNA Database by the Establishment of Primate Xenomitochondrial Cybrids," *Proceedings of the National Academy of Sciences* 94, no. 17 (August 19, 1997): 9131-35.

produce things like insulin or transplantable organs, it's not easy to see on what grounds we might object to temporarily housing a nuclear genome from one species in the cytoplasm of another.

If the risk and hybridity questions were resolved, then there would of course be two very great benefits to using ACT's strategy. First, ACT's technique provides a way around the problem of histoincompatibility; the person needing the transplanted tissue provides the somatic cell from which the tissue is produced. Perhaps more importantly, insofar as ACT's strategy does not involve human ova, it eliminates one of the largest concerns about creating embryos for research: pressure on women to donate ova.

Concluding Thoughts

In this essay I have delineated the issues that I believe an intellectually honest and adequate response to President Clinton's letter must address—or at least acknowledge. Indeed, because of time constraints, NBAC will not be able to do much more than acknowledge some issues. But if NBAC wants to both answer the President and serve the public interest, then it must squarely place the question concerning ES cell research in the context of embryo research. It must at least help the President and the public see the intellectual work that will need to be done after NBAC has submitted its report.

Before taxpayer money is spent on research involving embryos (whether human or hybrid), arguments should be made that persuade the majority of taxpayers and Congress that such research is ethically acceptable. Experience of the last few years makes it clear that that will not be easy. Nonetheless, it will not be impossible. Americans are mightily and appropriately impressed by the potential medical benefits associated with embryo research. That HERP's argument for limited embryo research did not prevail should not keep others from trying to make that same argument more persuasively.

Medical progress is a very great good, but it does not trump all others. In particular, it does not trump the good that is transparent and respectful public debate. It is ultimately (if not immediately) in

everyone's best interest to be as clear as possible about the facts. One of those is that ES cell research can not be done without dismembering embryos, whether they are hybrid or from a single species, viable or nonviable, whether created by IVF or SCNT.

If NBAC so narrows the scope of its report as to exclude, for example, the general question concerning SCNT to create embryos for research and the particular question concerning SCNT to create hybrid embryos, then it will have failed to adequately respond to the President's request. Beyond the fact that the President asked for a broader analysis, it is what the public needs and deserves. If NBAC will not at least begin to address the issues raised by the President's request, who will?