



STATEMENT DE-192

SPARE PARTS FROM THE UNBORN?: The Ethics of Fetal Tissue Transplantation

by Scott B. Rae

On November 10, 1988, surgeons at the University of Colorado Medical Center implanted fetal brain cells into the brain of a 52-year-old victim of Parkinson's disease, Don Nelson.¹ Following the surgery, Nelson reported some improvement in his ability to walk and speak. Since more conventional treatments had not been effective, the use of human fetal tissue was the only option left for alleviating some of the symptoms of Nelson's Parkinson's disease. However, the tissue was taken from a fetus who had been aborted for birth control reasons.

There is currently great excitement in the medical community about the prospects of fetal tissue transplantation. Abraham Lieberman of the New York University Medical Center put it this way: "Fetal tissue transplantation is to medicine as superconductivity is to physics."² Yet, Arthur Caplan, Director of the Center for Biomedical Ethics at the University of Minnesota, has called the ethical dimensions of this issue "the ticking time bomb of medical ethics."³ Although no one denies the urgent need to help people suffering from degenerative diseases, serious questions are being raised about the source of the tissue.

Fetal tissue transplants are actually part of a long-established tradition of using fetal cells in research. For example, the 1954 Nobel Prize for Medicine was awarded for a polio vaccine that was developed from fetal kidney cells. In addition, fetal cells were used in the production of a widely used vaccine for measles.⁴ In the early use of fetal cells, however, the *source* of the cells was limited to spontaneous abortions and ectopic pregnancies (see glossary), not elective abortions done for birth control purposes.

Fetal tissue is a good source of transplant material due to its potential for growth, its ability to differentiate (see glossary), and its ability to integrate into the recipient. It is also less subject to rejection in the transplant process.⁵ In addition, it is currently in high supply.

There are many potential uses for fetal tissue transplants, but the focus to date has been on the treatment of Parkinson's disease and diabetes. Using Parkinson's disease as an example, where the technology is most advanced, here is how a transplant of fetal tissue alleviates some of the symptoms:⁶ Parkinson's disease affects the part of the brain known as the substantia nigra. When the neurons there begin to disintegrate, the production of dopamine is impaired. This is the chemical that is necessary for the brain to generate both the walking and speaking functions. As a result, the patient experiences motor difficulty, rigidity, tremor, and even dementia, eventually rendering him or her unable to carry on any normal functions. As is the case with all neurological diseases, the tissue that is destroyed cannot be renewed. To treat the disease, the brain tissue from a human fetus is transplanted into the brain of the patient and within weeks the tissue begins to secrete dopamine. This represents an alternative to the customary drug

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therapy that contains dopamine or stimulates greater dopamine release from the existing healthy tissue in the brain.⁷

At present, there is adequate available tissue from elective abortions to meet the need of Parkinson's disease patients.⁸ However, should the technology develop as anticipated and be effective in treating a wide variety of degenerative diseases, the amount of tissue would fall far short of the demand.⁹

STATE OF THE SCIENCE

The best way to characterize the state of fetal tissue transplant technology is "experimental."¹⁰ This area is one of the few in bioethics in which the ethical discussion is ahead of the medical technology. It is encouraging to see the amount of ethical reflection that is taking place while the science is still being developed.

One method of treating Parkinson's disease that does not involve fetal tissue was attempted by researchers in both Sweden and Mexico who transplanted cells from the patient's own adrenal glands that also secrete dopamine.¹¹ The initial success reported in these countries was not confirmed in the United States,¹² which has raised skepticism about the accuracy of these early reports, particularly the experiments in Mexico.

Animal experiments with fetal tissue have, however, met with considerable success. Again in Sweden¹³ and in the United States,¹⁴ transplants of fetal tissue into rats have shown that the tissue, when transplanted, does find its way to the section of the brain that matches its physiological function. These advances were expanded when a 1986 experiment showed success in using fetal tissue in treating Parkinson's disease that had been induced in monkeys.¹⁵

The success with human recipients has not been as clear-cut, however. To date there have been only a handful of transplants performed on human beings in the United States. Don Nelson's transplant in November, 1988 was the first, followed by a similar operation at Yale University Medical School one month later. At the November 1988 annual meeting of the Society for Neuroscience, most of the researchers conceded that the recipients have received little clinical benefit; they called for more research on animals.¹⁶ Anders Bjorklund of the University of Lund in Sweden, who performed transplants on two Parkinson's patients in 1987, reported at that meeting that "the results have not been impressive" and "the implantations have not had any clinical significance."¹⁷ Though most researchers are optimistic about its eventual success, there are sharp differences of opinion on the timetable, and some call for more extensive animal research prior to moving forward on human beings.¹⁸

Should the technology be perfected, it shows promise for application to a number of other degenerative diseases such as Alzheimer's disease, Huntington's Chorea, and spinal cord or other neural injuries. In addition, the use of fetal liver cells shows promise for treating bone marrow diseases and blood disorders, and fetal pancreatic cells have been shown to help treat diabetes.¹⁹

STATE OF THE LAW

In the aftermath of *Roe v. Wade*, the federal government established regulations to limit the scope of experimentation on the fetus. In 1974, the Department of Health, Education and Welfare (HEW) created the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. The regulations recommended by this commission were adopted the following year. Experiments on the live fetus are permitted *only* if the research is of benefit to the fetus and if there is minimal risk to it. In cases where critical information cannot be obtained from any other source, nontherapeutic research is permitted as long as the risk to the fetus is minimal. Ironically, these regulations protect the fetus, as a subject of experimentation, in almost the same way adults are protected. Yet, the *Roe* decision denies the fetus the right to life throughout the first two trimesters. Most state laws restrict experiments

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on live fetuses (as do the HEW regulations), and the majority of states follow the federal regulations, with charges for violation ranging from misdemeanor to homicide.²⁰

The regulations further state that any experiments with dead fetuses be done in accordance with state law. Most states permit the use of tissue from dead fetuses under the provisions of the Uniform Anatomical Gift Act, which allows next of kin to donate the tissue, similar to organ donation from cadavers.²¹ However, eight states (Arizona, Arkansas, Illinois, Indiana, Louisiana, New Mexico, Ohio, and Oklahoma) prohibit the use of fetal tissue from dead fetuses,²² and seventeen states prohibit the sale of the tissue and fetal organs.²³ The law in Louisiana has been successfully challenged on the constitutional grounds that it unduly restricts a woman's right to an abortion. It should be noted, however, that the law was struck down due to its ambiguity, not any problem in principle.

The current discussion on this issue began in October 1987 with a National Institutes of Health (NIH) request for federal funding to transplant fetal neural tissue into the brain of a Parkinson's patient. In March 1988, the NIH convened a 21-member panel to study the issue. During the panel's deliberations in May, the administration announced a moratorium, still in effect (though in July 1991 the House passed a bill to lift the ban), on federal funding for such research. This effectively stopped most of the work, since federal funds pay for most medical research in this country. In December, the panel published its findings and made the following recommendations as parameters for research it considered ethically acceptable:

- The decision to abort must be made prior to discussion of the use of the tissue.
- Anonymity is to be maintained between donor and recipient.
- Timing and method of abortion is not to be influenced by the possibility of tissue use.
- Consent of the pregnant woman is necessary and sufficient unless the husband objects.
- No financial or other incentives are to be given to the woman who aborts and thus "donates" the tissue.²⁴

THE ETHICS OF FETAL TISSUE TRANSPLANTS

As we consider the ethical issues pertaining to fetal tissue transplants, three primary positions have emerged. The first not only justifies the use of the tissue from induced abortion; it also permits the conceiving woman to specify the person who receives the donated tissue. Thus, one may conceive *solely* for tissue donation (normally for a family member or relative), and even recruit unrelated women to conceive in order to donate the tissue.²⁵

The idea of conceiving life solely to terminate it and use the remains strikes most people as morally repugnant since the fetus is overtly used as a means and not an end, treated as a thing and not a person or potential person. For example, a Southern California family recently acknowledged publicly that the mother had conceived solely to provide a bone marrow match for her teenage daughter suffering from leukemia.²⁶ There were significant ethical concerns raised, even though there was no intent at any point to terminate the pregnancy. The child would grow up to enjoy a normal life irrespective of donor compatibility. The strong reaction in a case where the pregnancy will continue helps one understand the discomfort many feel over terminating a pregnancy for the purpose of donating tissue. Even if one granted that the fetus may not have full personhood from the point of conception (an assumption that is clearly inconsistent with a biblical medical ethic), it would still have some interests and be entitled to certain protections under the law. It cannot be argued that the fetus is morally neutral in the same way an organ or a piece of tissue is. The fetus is at least a *potential* person not to be treated merely as a piece of tissue that is exclusively the property of the woman. To legitimate the use of fetal tissue to this degree makes a powerful statement that life in the womb can be used without any consideration for its *potential* to become a fully human being — let alone its *already*

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realized status, according to the pro-life position, as fully human.

The second position also justifies the use of the tissue, but prohibits the right of the conceiving mother to donate the tissue to whom she pleases. This is essentially the position recommended by the NIH Panel in their December 1988 report.

The third position prohibits the use of all fetal tissue obtained from induced abortions. Since abortion done for family planning purposes cannot in any sense be considered good, the use of fetal tissue obtained from abortion is morally tainted. In addition, this position points out the difficulty with which lines are drawn that restrict the use of the tissue, and argues that there is nothing to prevent one from ending up with the commercialization of organs and human tissue.²⁷

ARGUMENTS AGAINST FETAL TISSUE TRANSPLANTS FROM ELECTIVE ABORTION

Not Parallel to Adult Organ Transplants

Advocates of fetal tissue transplants either assume or explicitly invoke the framework of the Uniform Anatomical Gift Act (UAGA). The UAGA has governed adult organ transplants for some time, and recently — with the rise of fetal tissue transplant technology — the law was expanded to include the fetus as an organ donor. The relevant part of the UAGA framework is the parallel between the dead fetus and the adult cadaver as an organ donor.

In a recent article in *Christianity Today*, Dr. Billy Arant, Jr., of the University of Texas Southwestern Medical Center, makes this parallel when he compares the debate on fetal tissue transplants to the earlier debate on organ donations in general: "The ethical and moral concerns raised during the early years when human organ transplantation was considered experimental were not very different from the ones heard today regarding the use of fetal tissue."²⁸ Later he asks, "Where, then, is the difference in using tissue obtained from human fetuses to restore health or extend life, especially if the tissue is obtained from fetuses aborted spontaneously — which will occur unpredictably in many pregnancies — just as accidental deaths provide a source of donor organs?"²⁹ This is precisely the parallel that is appropriate, and there is no moral difficulty with using the tissue from spontaneous abortions. However, most fetal tissue used in transplants comes from induced, not spontaneous, abortions. There are enormous differences between fetal tissue transplants from induced abortions and adult organ transplantations from accidental deaths; these render this parallel highly invalid. The use of the tissue from induced abortion is inconsistent with the UAGA framework, since:

(1) *The death of the fetus is intentionally caused, not accidental.* Though a small amount of fetal tissue from miscarriages and ectopic pregnancies is useful for transplants, the great majority of fetal tissue becomes available when a woman agrees to end her pregnancy *intentionally*, thus killing the developing fetus. This is hardly the same as when organs are recovered from someone killed in a tragic accident. LeRoy Walters, the Chairman of the Ethical and Legal Issues of the NIH Panel, said in 1974 (when only experimentation with the fetus, not tissue transplants, was being deliberated): "Ought one to make experimental use of the products of an abortion system, when one would object on ethical grounds to many or most of the abortions performed within that system? If a particular hospital became the beneficiary of an organized homicide system which provided a fresh supply of cadavers, one would be justified in raising questions about the moral appropriateness of the hospital's continuing cooperation with the suppliers."³⁰

A better parallel might be a banker who regards the drug trade as morally wrong, yet agrees to accept drug money at his bank in order to finance low income housing for the community. This banker would be involved in complicity with the drug trade, even though he is not involved with the actual sale of narcotics.

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(2) *Valid consent is impossible.* To date, fetal tissue transplants have been treated as any other organ transplants under the UAGA, thus requiring consent of next of kin. The mother cannot give morally legitimate consent, since she initiated the termination of the pregnancy. Elimination of consent, however, would further turn the unborn child into an object; it would be inconsistent with the fact that, biologically, the developing fetus does not represent the woman's tissue.

The UAGA and the NIH Panel both fail to recognize the difference between normal organ transplants and the use of fetal tissue. In the case of fetal tissue, the mother is presumed to be the one who gives consent to the use of the tissue for the transplant (or for some other form of experimentation). According to the normal understanding of proxy consent, her role assumes that she is acting in the best interest of the unborn child. Yet, she is *also* the one who has initiated the termination of the pregnancy. The late ethicist Paul Ramsey concluded that it is morally outrageous and a charade to give the woman who aborts any right to proxy consent for the donation of or experimentation on the aborted fetus's body parts.³¹ James Bopp and Father James Burtchaell conclude in their dissent from the NIH Panel Report, "We can think of no sound precedent for putting a living human into the power of such an estranged person, not for his or her own welfare, but for the 'interests' of the one in power."³²

Ironically, some who support fetal tissue transplants have argued that the aborted fetus would have "desired" to help those suffering from diseases that the tissue would benefit. This idea of fetal desire was first put forth in the attempt to justify research on living, nonviable fetuses. Case Western University ethicist Mary Mahowald and her team use this concept to justify not only fetal experiments but also tissue transplants, and appeal to Catholic ethicist Richard McCormick's concept that children, as members of the moral community, have a responsibility to be subjects in research that will benefit that community. (However, McCormick was arguing for the obligation of *children*, not *fetuses*, as research subjects.) When Mahowald and associates make this appeal, they are caught between affirming that the fetus has a responsibility as part of the moral community, and excluding it from the same community since it has no recognized right to life.³³

One may object to the need for consent in the first place, if the fetus is not considered a person. Yet this fails to recognize why fetal tissue is so valuable: *precisely because it is human*. Biologically, the fetus is much more than an organ or a piece of tissue. It is a developing human being with *at least* the potential for full personhood and thus *at least* the potential for full membership in the moral community from the time of conception. (It is not necessary here to argue that the fetus has full personhood from the time of conception, only that its potential to assume personhood makes it qualitatively different from an organ or other piece of tissue. Though the only logical point during pregnancy in which to recognize the full personhood of the unborn child is at conception, one does not need to press this point in order to oppose fetal tissue transplants.) Since abortion is taking innocent human life, all use of fetal tissue for experiments and treatment is ethically troubling — it is doing evil to accomplish good. The notion of the fetus as the source of biological "spare parts" is uncomfortably reminiscent of Aldous Huxley's *Brave New World*.³⁴

(3) *There is an equation of the donor and the donation of the tissue.* A more significant problem is encountered when one considers that the fetus is simultaneously both a *donation* and a *donor*. It is difficult to see how a fetus can be called a donor under the UAGA in parallel to an adult organ donor, if the personhood of the fetus is discounted. The fetus is a victim rather than a willing donor. When the donation of fetal tissue is described as a gift from the fetus as a donor, only miscarriages and ectopic pregnancies can stand on a moral basis, since these fetuses were only *unable*, and not *unwelcome*, to join the human community.³⁵

This is not a parallel to surrogate motherhood, where the mother is viewed as the donor and the tissue as the donation. Mahowald and associates equate the "moral problems thus raised [in fetal tissue transplants] to those that may occur in surrogate motherhood." However, they earlier acknowledge that "with fetal tissue transplantation (as with transplantation in general), a bad effect (loss of an organ or tissue) is suffered for the sake of the recipient, and

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there is no similarly bad effect in surrogacy." Their suggestion then that the parallel with surrogate motherhood helps provide some of the guidelines for fetal tissue transplantation ignores the obvious discontinuity, that the death of the fetus results from the transplants. This is hardly only a "bad effect," it is the destruction of the fetus.³⁶

(4) The "gift" of the tissue transplant cannot be both priceless and worthless at the same time. The use of the term "gift" is, to say the least, inappropriate when induced abortion is the means by which the gift is made available. If the fetus has no value, how can the tissue be legitimately called a gift and the fetus a donor? Few seem prepared to reject the UAGA framework to govern the use of fetal tissue. Yet the inadequacy of the language to describe the "gift" of a fetus reflects a strange ambivalence about the nature of the fetus.

Kathleen Nolan of the Hastings Center describes the alternative if the UAGA framework is rejected: "If we reject the framework of the UAGA, we seem doomed to accept arguments that implicitly or explicitly equate fetuses with things or beings that they are not — among them kidneys, tumors and discarded surgical specimens. Yet biologically, the fetus is not a tissue or an organ but a body, and morally, the fetus is a developing being and potential member of the human community. Fetal remains accordingly ought to evoke emotions and protections beyond those given tumorous tissue or unwanted organs."³⁷

Proposed Restrictions Are Unenforceable

Given the growing public awareness of medical technology and the increasing benefits that will be made available, *keeping the two distinct acts of consent (abortion and tissue donation) separate is virtually impossible.* All of the proposed guidelines treat this as one of the non-negotiable aspects of the transplants. It would not be difficult to imagine that, given separate consent forms, coercion to donate tissue would enter in, in view of potential transplant benefits, the likely scarcity of available tissue as the technology develops, and the vulnerability of women anticipating an abortion.

Given the potentially lucrative market for the transplants, keeping *financial inducements* from entering in would be difficult, and impossible to enforce. For example, Hana Biologics, one of the firms testifying before the NIH Panel, estimates the total market for using the fetal pancreatic tissue to treat diabetes amounts to approximately six billion dollars annually.³⁸ This obviously has the potential to become very big business.

Abortion clinics stand to reap a substantial increase in revenue simply from the small amount (on average, \$25 per organ, multiplied by the hundreds of thousands of abortions performed annually) that the nonprofit acquisition organizations offer. The financial incentives to "recruit" fetal tissue donors would be significant. Moreover, there are numerous noncash inducements that are difficult to detect and impossible to adequately police that would be especially appealing to poor and minority women. For example, the clinic could offer a "discount" on the abortion procedure itself or promise to provide future medical care for a specified time following the donation of the tissue. With the anticipated profitability of the industry once the technology can alleviate a larger number of diseases, there will be increasing pressures to "share the wealth" produced by these transplants.

A recent California court decision may set a precedent that will make it more difficult to prevent women from obtaining compensation for the donation of fetal tissue. In *Moore v. Regents of the University of California*, an appeals court reversed a lower court decision, ruling that a person does have a property interest in his or her own cells.³⁹ In treatment for leukemia, doctors at the UCLA Medical Center removed the spleen of a Mr. Moore, and discovered that they could manufacture a cell line from that tissue that was effective in slowing certain types of leukemia. The medical center then sought out a commercial arrangement with a pharmaceutical company to market the cell line. When asked for his consent, Moore refused and sued the University for his share of any profit resulting from the cell line. Though the court did not rule on his right to compensation, they did hold that individuals have a

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property interest in their own cells, and thus a right to control what becomes of their tissues. One can see how this could open the door not only to financial inducements but to a *right* to compensation for fetal tissue donation.

This potentially lucrative market will make it increasingly difficult to enforce another of the proponents' guidelines, *the separation of the transplant physician/researcher and the one who performs the abortion*. This is a key distinction for transplant proponents, even for those who are against abortion in most cases, who assume that the morality of abortion and transplants can be separated. Yet, clearly, the means as well as the end have moral significance.

For the best medical results there would need to be an institutional, symbiotic relationship with the abortion industry, thereby making the separation of abortion and tissue procurement very difficult. This partnership will also make it more complicated to isolate the timing and method of abortion from what is necessary to procure the best possible tissue. Mahowald and associates already propose that pregnancies be prolonged and the method of abortion be modified, if necessary, in order to procure the most fresh, and thus the most useful tissue.⁴⁰ In addition, some acknowledge the legitimate possibility of tissue being removed from live, nonviable fetuses.

Redeeming Abortion?

Fetal tissue transplants from induced abortions will serve to enhance abortion's image — to many it will at least seem morally neutral. At a minimum, donating tissue would offer relief from some of the guilt that many women feel when electing abortion, thus alleviating some of the ambivalence that usually accompanies it. Though our society tragically permits abortion, most do not view abortion itself as good. Even the most vocal pro-choice advocates acknowledge that it is the *right to choose* that is good, not the act of terminating a pregnancy itself.

The prospect of donating tissue is not likely to dramatically increase abortions unless the pregnant mother is allowed to designate who receives the tissue. But it would certainly *contribute* to the decision to abort and might push some women "over the line." The routine retrieval of the tissue would no doubt make the unborn's death seem less tragic. Nolan puts it this way: "Enhancing abortion's image could thus be expected to undermine efforts to make it as little needed and little used a procedure as possible."⁴¹

Even some tissue transplant advocates acknowledge that they may create a greater incentive to abortion, or may lead women to decide for abortion who would not otherwise.⁴² This argument against the transplants distinguishes between abortion and the freedom to choose abortion. Many pro-choice advocates are increasingly uncomfortable with the number of abortions performed in this country. Many see the increased effectiveness of contraception as good because it prevents the occurrence of the trauma and tragedy of surgical abortion. Even support for RU 486 (the "abortion pill," currently sold in much of Europe and the Third World, but not available in the United States) is based on this same notion. Thus, anything that would increase surgical abortions can hardly be considered good by anyone. Though our society recognizes the *legality* of abortion, we have rarely seen fit to actively *encourage* it.

Research shows great ambivalence toward abortion among women considering it.⁴³ There is usually intense anxiety during the final 24 hours before the abortion is performed. Studies of pregnant women choosing abortion show that between one-third and 40 percent change their minds at least once, and around 30 percent do not finally make up their mind until just prior to the procedure. Thus, it is likely that the prospect of solace over the guilt that usually accompanies abortion will enter into the complex set of factors that are involved in the decision to abort. The possibility of "redeeming abortion" throws a powerful human motivation into the already complex situation that will affect those one-third to 40 percent who change their minds during the process. Bopp and Burtchaell, in their dissent from the NIH Panel Report, state, "It is willful fantasy to imagine that young pregnant women estranged from their families and their sexual partners, and torn by the knowledge that they are with child, will not be powerfully relieved at the prospect that the sad act of violence they are reluctant to accept can now have redemptive value."⁴⁴

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One wonders if government sponsorship of fetal tissue transplants would have the same legitimizing influence on abortion that *Roe v. Wade* did. Though the justices in that decision clearly did not want to make a decision on the personhood of the fetus, it can be argued that by allowing abortion they did make a powerful statement that has "trickled down" to a significant part of society.

Possibilities for Abuse

Some of the abuses that the proponents' regulations are designed to prohibit are already being seriously proposed by more radical proponents. These primarily deal with recipient designation of the tissue. Though the "slide down the slippery slope" can likely be stopped in the short term, given the promise of the technology, it is doubtful that long-term pressures can be resisted to allow women to conceive in order to abort and thus donate the tissue. As interest groups — many of whom testified before the NIH Panel — become more dependent on the tissue, they will likely begin to press their "rights" to the tissue, further complicating the ability of society to stop the descent down the slippery slope before it reaches a place that only the most extreme proponents advocate.

There are thus possibilities for abuse about which even the more moderate advocates are wary. Already there have been people not simply *willing* but *eager* to conceive just to donate the tissue.⁴⁵ Fetal tissue is currently being used to make cosmetics in Sweden, and fetal kidneys from Brazil and India are being sold in West Germany to physicians for transplant.⁴⁶ It is true that most advocates recommend some laws or voluntary guidelines to keep such abuses from taking place. These may be adequate for the short run, but there are no guarantees that these kinds of abuses can be prevented in the long run as the process becomes more acceptable. This opposition to the transplants is not "burning down the barn to roast the pig," but rather, stopping the descent down the slippery slope at the top. It is naive to think that the long-run pressure can be resisted, given the powerful incentives to donate the tissue that the advances in medical science promise to provide.

A Valid Alternative

One viable alternative is the combination of the use of tissue from spontaneous abortions and ectopic pregnancies for both transplants *and* the development of cell cultures from the most promising tissue. This is already being done for diabetes. Also, the development of neuroblastoma cells shows promise for treating Parkinson's disease.⁴⁷ The American Paralysis Association's statement to the NIH Panel encouraged adequate funding to develop tissue cloning that will bypass the need for the fetus *per se*.⁴⁸

My opposition to fetal tissue transplants from induced abortion is essentially that of the British Medical Association in their interim guidelines.⁴⁹ The first of these guidelines is the most relevant for this section: "Tissue may be obtained only from dead fetuses [*sic*] resulting from therapeutic or spontaneous abortion." These guidelines reflect the statement of the Council of Europe, adopted in September, 1986. As of July, 1989, however, the British government had adopted the recommendation of the later Polkinghorne Report that fetal tissue transplants from induced abortions be allowed. Interestingly, the Committee suggested that the fetus does have the same moral status as a human being from the fourteenth day after conception. In contradiction to this, they denied that there is any inherent immorality involved in using the tissue from an induced abortion. If the fetus has such full personhood, the arguments favoring abortion as well as fetal tissue transplants are very difficult to maintain.

I wish there were not ethical difficulties with fetal tissue transplants, since they hold promise for treating various diseases. Because of the moral tensions involved, I support the continuation of the moratorium on research and transplants of fetal tissue from induced abortions. One hopes for the day when cell culture technology will have

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advanced to the point where fetal tissue from induced abortions will no longer be needed to achieve the same benefits.

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NOTES

¹ "Denver Hospital Defies Ban on Fetal Tissue Transplant," *Medical Ethics Advisor* 4 (December 1988):161. See also Andrew Simons, "Brave New Harvest," *Christianity Today*, 19 November 1990, 24-25.

² Quoted by Richard John Neuhaus, "The Return of Eugenics," *Commentary* 85 (April 1988):18.

³ Statement made in testimony before the NIH Panel, 15 September 1988, and contained in the *Report of the Human Fetal Tissue Transplantation Research Panel* (hereafter *RHFTTRP*), vol. 2, D68.

⁴ Statement made by Robin Chandler Duke, in testimony to the NIH Panel and contained in the *RHFTTRP*, vol. 2, D114.

⁵ A helpful summary of the scientific advantages of fetal tissue for some of these transplants is Robert Auerbach and Harold R. Wolfe, *RHFTTRP*, vol. 2, D28-D31.

⁶ The medical discussion of Parkinson's disease is taken from Alan Fine, "The Ethics of Fetal Tissue Transplants," *Hastings Center Report* 18 (June/July 1988):5.

⁷ Christopher M. DeGiorgio, "Medical and Selected Ethical Aspects of Fetal Tissue Transplantation," *Critical Issues in Health Care* (1989):2.

⁸ Fine, 6.

⁹ James Bopp and James Burtchaell, "Fetal Tissue Transplantation: The Fetus as Medical Commodity," *This World* 26 (Summer 1989): 67-68.

¹⁰ Henry T. Greely, et al., "The Ethical Use of Human Fetal Tissue in Medicine," *New England Journal of Medicine* 320 (20 April 1989):1093.

¹¹ I. Medraza, R. Drucker-Colin, V. Leon, and C. Torres, "Open Microsurgical Autograft of Adrenal Medulla to the Right Caudate Nucleus in Two Patients with Intractable Parkinson's Disease," *New England Journal of Medicine* 316 (1987):831-34.

¹² DeGiorgio, 3.

¹³ Edwin Kiester, Jr., "Spare Parts for Damaged Brains," *Science* 86 (March 1986):47-56.

¹⁴ Steven McLoon and Raymond Lund, "Development of Fetal Retina, Tectum and Cortex Transplanted to the Superior Colliculus of Adult Rats," *Journal of Comparative Neurology* 217 (1983):376-89.

¹⁵ Walter Sullivan, "Cell Implants Curb Parkinson's in Two Monkeys," *New York Times*, 17 May 1986, 1.

¹⁶ Rick Weiss, "Fetal Cell Transplants Show Little Promise," *Science News* 134 (1988):324.

¹⁷ *Ibid.*

¹⁸ John R. Sladek and Ira Shoulson, "Neural Transplantation: A Call for Patience Rather than Patients," *Science* 240 (10 June 1988):1387.

¹⁹ Kathleen Nolan, "Genug Ist Genug: A Fetus Is Not a Kidney," *Hastings Center Report* 18 (December 1988):13.

²⁰ Mildred Washington, "Fetal Research: A Survey of State Law," *Congressional Research Service Report for Congress* (8 March 1988):1.

²¹ John A. Robertson, "Rights, Symbolism and Public Policy in Fetal Tissue Transplants," *Hastings Center Report* 18 (December 1988):5.

²² *Ibid.*, 12, note 37. The statute in Louisiana has been successfully challenged on constitutional grounds that it restricts the woman's right to an abortion guaranteed under *Roe v. Wade*. It is unclear, however, whether the law actually restricts the right to an abortion or the right to designate a recipient of the fetal tissue. It appears that the challenge

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assumed that the fetus was the right of the mother to dispose of as she wished.

²³ *Ibid.*, 12, note 28. These states include Arkansas, Illinois, Ohio, Louisiana, Oklahoma, Florida, Massachusetts, Maine, Michigan, Minnesota, North Dakota, Nevada, Rhode Island, Tennessee, Texas, Pennsylvania, and Wyoming.

²⁴ Consultants to the Advisory Committee to the Director, National Institutes of Health, *RHFTTRP*, (December 1988):vol. 2, A25.

²⁵ This position appears in the writing of John A. Robertson in two principal articles: "Fetal Tissue Transplants," *Washington University Law Quarterly* 66 (1988):443-98; and "Rights, Symbolism, and Public Policy in Fetal Tissue Transplants," *Hastings Center Report* 18 (December 1988):5-12.

²⁶ The intent of the family to conceive solely for the bone marrow donor is underscored by the fact that the father underwent surgery to reverse a vasectomy six months prior to conception of the child who will be the donor. See *Orange County Register*, Sect. B, 31 August 1990. The bone marrow transplant was performed in May, 1991.

²⁷ This position is represented by James Bopp, Esq. and Father James Burtchaell in their dissent from the majority opinion of the NIH Panel. See Bopp and Burtchaell, 54-79.

²⁸ Billy S. Arant, Jr., "Why the Government Should Lift the Moratorium," *Christianity Today*, 19 November 1990, 28. *Ibid.*

³⁰ LeRoy Walters, "Ethical Issues in Experimentation on the Human Fetus," *Journal of Religious Ethics* 2 (Spring 1974):41, 48.

³¹ Paul Ramsey, *The Ethics of Fetal Research* (New Haven: Yale University Press, 1975):89.

³² Bopp and Burtchaell, 59.

³³ This point is made by Nolan, 14. The reference to Mahowald and team is taken from Mary B. Mahowald, Jerry Silver, and Robert A. Ratcheson, "The Ethical Options in Transplanting Fetal Tissue," *Hastings Center Report* 17 (February 1987):9-15.

³⁴ Stuart A. Newman, "Statement on Proposed Uses of Human Fetal Tissue," *Panel Report*, vol. 2, D207.

³⁵ Nolan, 18.

³⁶ Mahowald, et al., 12, 15.

³⁷ Nolan, 16.

³⁸ Karen Southwick, "Fetal Tissue Market Draws Profits, Rebuke," *Health Week*, 12 October 1987, 1.

³⁹ *Moore v. Regents of the University of California*, California Court of Appeal, 249 Cal. Rptr. 494 (1988). Review granted by California Supreme Court, 252 Cal. Rptr. 816 (10 November 1988).

⁴⁰ Mahowald, et al., 7-15.

⁴¹ Nolan, 17.

⁴² "Concern that the use of fetal tissue for transplantation in such cases could become an incentive for abortion thus appears well grounded." Fine, 6.

⁴³ Michael Bracken, Lorraine Klerman, and Mary Ann Bracken, "Abortion, Adoption or Motherhood: An Empirical Study of Decision-Making During Pregnancy," *American Journal of Obstetrics and Gynecology* 130 (1978):256-57.

⁴⁴ Bopp and Burtchaell, 67.

⁴⁵ Tamar Lewin, "Medical Use of Fetal Tissue Spurs New Abortion Debate," *New York Times*, 16 August 1987, 1.

⁴⁶ Debra McKenzie, "Third World Kidneys for Sale," *New Scientist*, 28 March 1985, 7; "Embryos to Lipsticks?" *New Scientist*, 10 October 1985, 21.

⁴⁷ For the use of fetal pancreatic cells in the treatment of diabetes, see the *Panel Report*, vol. 2, D255. For the use of neuroblastoma cells, see 12.

⁴⁸ *Panel Report*, vol. 2, E15.

⁴⁹ Cited in the *Panel Report*, vol. 2, D101. See also David Dickson, "Fetal Tissue Transplants Win U.K. Approval," *Science* 245 (4 August 1989):464-65.

GLOSSARY

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- **Bioethics:** The study of ethical issues in medicine and the life sciences.
- **Cell Culture:** A process by which cells are "manufactured" to suit a specific medical purpose.
- **Differentiation:** The ability of cells to develop the different functions necessary to perform their particular roles in the body.
- **Ectopic Pregnancy:** A pregnancy in which the fetus implants in the fallopian tube instead of the uterus.
- **Neuroblastoma Cells:** Neurological (brain) cells that are cultured for use in treating degenerative neurological diseases.
- **Roe v. Wade:** The 1973 U.S. Supreme Court decision that legalized abortion on demand during the first two trimesters of pregnancy.