

medical community now face a difficult decision: to prevent the production of blastocysts by nuclear transplantation, or to pursue paths of medical research and therapies that, in my view, will affect hundreds of thousands of lives.

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EUROPEAN PERSPECTIVES ON THERAPEUTIC CLONING

ALTHOUGH recent advances in stem-cell research hold promise for therapeutic use, this promise has been accompanied by social, political, economic, legal, religious, and ethical questions. These questions have touched a raw nerve, and numerous laws and regulations have been implemented or are being considered in order to control the use and spread of this new technology. The legal situation is particularly complex in Europe, where each country is governed through both national legislation and the international European legislation passed by the European Union. Since there are deep social and political disparities among countries within the union that stem in part from cultural and religious differences, it is not surprising that a patchwork of legislation and regulation is emerging. These legislative and regulatory initiatives address two main ethical questions. First, does the production or use of human embryos in research threaten human dignity? And second, might therapeutic cloning lead to a commercialization of human eggs or embryos? In this article, I will discuss the ways in which these questions are being addressed in Europe.

PRODUCTION AND USE OF EMBRYOS IN RESEARCH AND THERAPY

The debate over the production or use of embryos in research can be reframed to highlight the ethical issues if it is posed in the following form: to what extent do human embryos and fetuses in their early stages have the right to protection? It is a fundamental tenet in many European cultures that humans shall not be treated merely as the means to an end but also as ends in themselves. If the rights accorded to humans after birth are also valid for unborn humans, from what stage of development are these rights accorded?

The vigor with which this problem is debated varies from country to country. In countries in which religion has a strong influence on political decision making, such as Italy, Germany, Norway, Argentina, and the United States, the moral status of the human sperm, egg, or fetus is at the center of the debate. If a fertilized egg is conceded moral status, conducting experiments on this egg becomes more morally problematic than if it were not conceded any such status in its own right. A focus on human dignity reveals a basic conflict: the mother's dignity (especially her right to ultimate authority over her own body) stands opposed to that of the fertilized egg (in terms of its right to develop into a person). The dignity of the adult human (male or female) also conflicts with what is alleged in some countries to be the right of the

sperm or unfertilized egg not to be prevented from fertilizing or being fertilized by the use of contraception.

Norway has prohibited research on fertilized eggs in a law formulated in such a way that, although it does not explicitly mention therapeutic cloning, nevertheless implies a ban on such activity. In this regard, Norway resembles Germany, where the current legislation does not allow the production of stem cells from fertilized eggs.^{1,2} However, in both countries, it seems probable that it would be permissible to import stem-cell lines that have been established from fertilized eggs in other countries, although the laws are not entirely clear in this regard; the law in Norway is currently undergoing revision. In contrast, the governments of Sweden, the Netherlands, and France have either already accepted the use of fertilized eggs as a source of stem cells or suggested that such use be accepted.³ In fact, there are scientists in France who consider therapeutic cloning to be a “duty of solidarity to future generations”⁴ in view of the great promise this technique holds for the future treatment of a variety of human diseases.

In more secular countries, such as Sweden, where the right to use contraception and the right to have an abortion are not political issues and are considered fundamental rights, the rights of the unborn are simply those posited in the law on abortion. As long as a fetus can legally be aborted, it has no rights independently of its mother and can be used in experiments, given her informed consent and permission from the National Board of Health and Welfare. According to the current rules, such permission can be granted only if there are no acceptable alternatives for reaching similar types of results. Similarly, embryos that are left over from *in vitro* fertilization (which are in any case destined to perish) can be used with the informed consent of both donors.

However, there is serious concern about putative threats to human dignity in secular countries as well. For example, there is a clear difference in attitude between the acceptance of research involving existing embryos that would never develop and be born anyway and the acceptance of the production of new embryos specifically for the purpose of research. Reluctance to accept the latter is far more common than reluctance to accept the former. In France, for instance, the National Consultative Ethics Committee recommends “controlled possibilities for the use of spare IVF [in vitro fertilization] embryos for research purposes, in particular research on embryonic stem cells,” while issuing a “firm reminder that creation of human embryos for the purpose of research is prohibited.”⁵

The logic of this decision is not obvious but derives, in part, from attitudes toward life and the liv-

ing. Fertilizing eggs and producing new embryos might be considered to be more active and advanced than simply making use of the ones that are already available. Thus, there is a common fear that if it is acceptable to create an embryo for therapeutic cloning, it will only be a short step to using such embryos for reproductive cloning. Arguably, it will be difficult to uphold the difference in attitudes toward using existing human embryos and toward producing new human embryos for research purposes with the aim of saving lives. However, if the use of existing embryos leads to the creation of new embryos, then one could argue that the latter may, in turn, lead to the reproducing of humans by cloning.

Does the fear of a potential path to reproductive cloning carry sufficient weight to warrant a prohibition against therapeutic cloning? In my opinion, it does not, since reproductive cloning of humans faces many practical hurdles and does not hold the same potential as therapeutic cloning for the treatment of previously incurable disease. However, this fear highlights the need for regulation to prevent this sequence of events from occurring. I suspect that such regulation would meet only mild opposition, if any. There are practically no politicians, and very few scientists, advocating reproductive human cloning in Europe today, and most agree that this field must be carefully regulated by strict rules for the handling of embryos and stem cells, in order to prevent abuse or undesired consequences.

It is important to note that there is a difference between attitudes toward the production of embryos from eggs and sperm and toward the creation of embryos through somatic-cell nuclear transfer. The Swedish Research Council does not accept the former, on the grounds that there are less invasive methods that may be used for acquiring embryos, but it does accept the creation of embryos for research purposes through somatic-cell nuclear transfer. At the present time, national research councils or ethics committees in Sweden, Belgium, and the United Kingdom have all voted to permit therapeutic cloning by somatic-cell transfer, arguing that the medical benefits outweigh the risks.⁶ However, there is a legal hurdle in Sweden that has yet to be overcome. Like France and 28 other European countries,^{7,8} Sweden has signed the Council of Europe Convention on Human Rights and Biomedicine (adopted by the council’s Committee of Ministers on November 19, 1996), according to which human embryos must not be produced for research purposes,⁷ and is therefore obliged to appeal for exception from the convention before ratification in order to be able to legalize therapeutic cloning. (Denmark, on the other hand, is one of the 12 countries that have already ratified the convention, whereas Germany, Belgium, and the United King-

dom are among 13 countries that have not signed it at all.)

COMMERCIALIZATION OF EMBRYOS

If therapeutic cloning is successful, do we risk turning unborn humans into commercial goods? And if so, is that bad? At the moment, fertilized eggs can only be donated, not bought or sold, but the potential market for such goods is, of course, enormous. The Swedish Research Council judges the commercialization of embryos and stem cells to be incompatible with good research ethics and finds it “very urgent that protection by criminal law be established, not least in view of the strong international interest in the Swedish embryonic stem-cell lines.”⁶ The Swedish government is likely to heed this request, and the same can be said about the governments in France, Germany, and most other European countries. (A possible — though by no means certain — exception might be the United Kingdom, where a politically different and considerably more neoliberal economic policy dominates.)

Thus far, say some critics, the famous free market has been more notable for its greed than for its humanity — certainly not for its moral sophistication; thus, a scenario in which embryos and human fetuses become commercial products is not unrealistic (an objection that has frequently been raised — for example, at the open hearing on therapeutic cloning held in Oslo, Norway, on December 11, 2000). Yet even if we are cynical enough to take advantage of the human desperation that we currently allow to exist (notably, but not exclusively) in developing countries, it would still be hard to purchase fetuses in the numbers required. For example, five to six fetuses are needed in order to get enough embryonic brain cells to treat one patient with Parkinson’s disease.⁹ Thus, it is possible that the fear of commercialization of embryos could be used as an argument in favor of stem-cell research: to the extent that fetal neural stem cells can be grown in culture, the need for aborted fetuses decreases. It is well established that people, most often poor ones, do in fact sell organs¹⁰ and even their entire bodies — for example, when they accept prostitution or slavery in sweat-shop jobs in order to survive or feed their children. Ideally, a society should not force its members to sell even parts of their bodies in order to survive, but in the reality we actually live in, selling an egg cell in clinically sound conditions may be far from the worst option available for many people.

These examples notwithstanding, the risks involved in introducing commercial interests into this area must not be underestimated. Creating human embryos in order to save lives is one thing. Creating them in order to earn money is quite another. From

an ethical point of view, any commercialization of unborn humans must either be completely prohibited or be subject to strict international legislation ensuring the protection of human rights and the dignity of all humans, especially those in a weak social position. In a risk–benefit analysis, the issue is not just whether or to what degree one outweighs the other, it is also a question of who gets what — that is, of how the risks and benefits are distributed.

The concern is that the negative consequences of scientific and technological advances are often borne disproportionately by disadvantaged groups that do not enjoy the benefits of these advances. For example, in the words of Jane Lubchenco, the former president of the American Association for the Advancement of Science, the consequences of environmental degradation are “often borne disproportionately by racially and economically disadvantaged groups. Wealthier individuals or countries can afford to . . . influence the political process, cope with environmental disasters . . . and purchase quality medical services and treatments.”¹¹ Ethically speaking, the equitable distribution of benefits from scientific and technological advances is paramount, and risks should be borne in proportion to the benefits enjoyed. Stem-cell research holds out promise in this regard as well, for it may ultimately allow high-quality medical care to be offered at relatively low cost, which would particularly benefit countries with limited economies. Such an eventuality would lend additional weight to the argument that therapeutic cloning is a “duty of solidarity to future generations,” for the availability of low-cost care would help to bridge the gap between economically advantaged and disadvantaged countries by improving the medical services in the latter.

SUMMARY

If stem-cell research were allowed to develop further, advances in this field could ensure the treatment of numerous human diseases, such as Parkinson’s disease, Alzheimer’s disease, multiple sclerosis, heart disease, diabetes, and leukemia. A bank of stem-cell lines is currently being developed in Sweden. On the other hand, it is clear that the need to regulate the use of knowledge increases in proportion to the effect that knowledge has on society. With respect to human cloning, we need international rules that protect all people from potential abuse in all countries equally (with special emphasis on and awareness of people in an economically, politically, or environmentally disadvantaged position). To achieve such protection, this regulation must cover research and its applications in every region, independently of whether it is privately or publicly funded. In order for such a regulation to be more than yet another eloquent and toothless declaration, the rules must

be backed up by an internationally representative body with the mandate to issue sanctions. A substantial challenge will be to prevent abuse and ensure protection without thereby hindering the science from developing sufficiently to fulfill its promise.

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