SMALL THINGS CONSIDERED: THE ETHICAL SIGNIFICANCE OF HUMAN EMBRYONIC STEM CELL RESEARCH

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Weighty matters sometimes concern the very small. In physics, for example, splitting the atom changed the world. In biology, mutation of a single nucleotide base pair can give rise to diseases such as sickle cell anemia.[1] In music, melody reaches the brain by way of the body's smallest bones positioned within the middle ear.[2] In religion, by omitting from one word in *Deuteronomy* the smallest Hebrew letter *yod*—a jot of ink the size of a comma—King Solomon altered the meaning of the text to justify polygamy.[3] In law, on the basis of a solitary semicolon, the San Francisco Superior Court this year rejected a proposed court order that would have halted same-gender marriage.[4] In literature, the detective Sherlock Holmes solved difficult cases by applying his intellect to the analysis of small yet significant, ordinarily unnoticed details.[5] And today, scholars from many disciplines are assembled here to consider the obligations of science, society, and the law with regard to nascent human life.

The human embryo, likewise, is a small detail of vast importance. To

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1. *See* MAYO CLINIC STAFF, MAYO CLINIC, *Sickle Cell Anemia* (July 8, 2003), *at* http://www.mayoclinic.com/invoke.cfm?id=DS00324.
2. *See* MAYO CLINIC, *Audiological Testing Services*, *at* http://www.mayoclinic.org/audiology-jax/hearingtests.html (last visited Mar. 23, 2005).
3. MIDRASH RABBAH: EXODUS 103-04 (S.M. Lehrman trans., The Soncino Press 1983) (Midrash on *Deuteronomy* 17:17; *Matthew* 5:17-19).
4. *See* Lisa Leff, *Sides Files Briefs in Gay Marriage Legal Showdown*, VENTURA COUNTY STAR, Feb. 17, 2004, at 5.
5. *See* William P. Cheshire, *Inevitable Human Cloning as Viewed from 221-B Baker Street*, 20 ETHICS & MED. 141-49 (2004).

consider the embryo vis-à-vis the preceding analogies is to encounter an entity endowed with potential, compactness, fragility, dynamic linkage to a harmonious continuum, givenness, and particularity. The embryo, indeed, is a living clue to the mystery of emerging humanity. To this, one naturally responds in awe. Regardless of what one's views may be on politics, jurisprudence, stem cell research, or cloning, thoughtful people generally agree that the beginning of human life marks something special.[6] The initiation of human form during embryogenesis is a phenomenon unlike any other in biology.[7] From this humble beginning emerge the minds of scientists, physicians, poets, philosophers, and lawyers alike.

And yet, within our shared sense of awe, there is a small difference of great consequence. The disparity to which I refer lies in divergent judgments about the purpose for which embryos exist, and hence leads to conflicting views of how biotechnology ought to be regulated. One form of awe, to which I will refer as "practical awe," marvels at the scientific discoveries and potential medical applications latent within the embryo that possesses the very secrets of cellular differentiation. Practical awe looks to embryonic stem cell research and human embryo cloning in the hope of finding revolutionary advances in science and medicine.

Another form of awe, to which I will refer as "sacred awe," respects the embryo as the biological beginning of a new human life. Sacred awe recognizes the embryo's membership within the human family and appreciates that the embryo is a living organism of the species *Homo sapiens* who is actively unfolding her genetic blueprint along the developmental trajectory of a unique and gifted individual. This view does not depend on religious revelation and need not confer on nascent life the full legal status accorded humans born. It simply appreciates an implicit dignity and inviolability about human life in its continuity across all stages of development that science reveals in wondrous detail.

Practical awe regards the embryo as morally similar to any other bodily tissue sample, that is, deserving a measure of respect as a human specimen. Practical awe aspires to unrestricted access to embryos for research projects aimed at understanding early human development and generating potential medical therapies. Practical awe delights in the anticipated fruits of embryonic stem cell research and may tolerate exaggeration where claims promote moving beyond what is currently a limited degree of knowledge in this new field. Trusting in scientific

6. Jose B. Cibelli et al., *The First Human Cloned Embryo*, SCI. AM., Jan. 2002, at 44-51; *see also*, PRESIDENT'S COUNCIL ON BIOETHICS, BIOTECHNOLOGY AND PUBLIC POLICY: BIOTECHNOLOGIES TOUCHING THE BEGINNINGS OF HUMAN LIFE (Staff Working Paper Oct. 2003), *available at* http://bioethics.gov/background/bpp_defend_dig.html.

7. *See* JAN LANGMAN, MEDICAL EMBRYOLOGY 1 (4th ed. 1981).

progress above all else, practical awe risks overlooking the potential for abuse of technology in the hands of fallible people.[8]

Sacred awe maintains that all human life is created with immeasurable dignity. Sacred awe reveres the amazing potential innate to existing embryonic life. Sacred awe thus welcomes research on stem cells derived from adult tissue and umbilical cord blood, which has shown considerable scientific promise, having already moved into clinical applications without depending on the destruction of human life. Sacred awe cannot in good conscience, however, countenance proposals to harvest embryonic stem cells by sacrificing nascent human lives for biotechnology projects. To do so would violate the special respect owed innocent human life. To conscript some of the youngest of our kind for research entailing their destruction would transgress the ethical line of nonmaleficence and profoundly distort the meaning of human procreation.

It is sometimes argued that public policy should balance medical and ethical considerations. As important as medical benefits are, it would be perilous to place medical and ethical interests on the same scale. Medicine has a positive obligation to promote scientific research to benefit suffering patients, and there are many ways available in which to pursue such research. From the time of Hippocrates, medicine also has the obligation to "first, do no harm."[9] This negative obligation can be satisfied only by refusing to violate the norm that one should not harm or exploit human life in the service of positive interests. Whereas the ways of beneficence have no upper limit, in that there will always be more that could be done to improve medical knowledge and the human condition, the requirement of nonmaleficence represents a lower limit for ethically acceptable research. It sets a critical constraint on the manner in which we may ethically pursue the obligations of beneficence.

Western civilization inherits a rich history of efforts to protect human subjects from research abuse. Among these, the Nuremberg Code specifies that no experiment should be conducted where there is an "*a priori* reason to believe that death or disabling injury will occur."[10] It is important to note that the Code does not discriminate on the basis of age. It imposes no threshold of developmental maturation below which vulnerable human

8. *See* C. S. LEWIS, THE ABOLITION OF MAN 67 (Simon & Schuster 1996) ("[W]hat we call Man's power over Nature turns out to be a power exercised by some men over other men with Nature as its instrument.").

9. HIPPOCRATES, EPIDEMICS, *in* 1 HIPPOCRATES 165 (W.H.S. Jones trans., Harvard Univ. Press 1923) (Book I, § XI).

10. Leonard H. Glantz, *The Influence of the Nuremberg Code on U.S. Statutes and Regulations*, *in* THE NAZI DOCTORS AND THE NUREMBERG CODE: HUMAN RIGHTS IN HUMAN EXPERIMENTATION, 183, 184 (George J. Annas & Michael A. Grodin eds., Oxford Univ. Press 1992).

subjects are denied protection. Fundamental protection is assumed to be owed to all human beings equally.[11]

It is sometimes argued that ethical codes for human research subjects should not apply in this case because the human embryo is too small an entity to qualify as a human form. In response, it must be remembered that this is exactly what every human being looks like at the earliest stage of development along the biologic lifespan. As Nigel Cameron points out, "[t]o suggest that the size of the embryo—or of any object—is its most significant aspect implies a thoroughly pre-scientific view of the world."[12] Quite apart from the breathtaking cellular detail that can be seen through the lens of the electron microscope, genetics and embryology reveal the astonishing complexity of the self-organizing, complete, and integrated organism classified as the human embryo. Some of the most expensive and elaborate scientific research today concerns nanotechnology and subatomic physics, which explore the complexities of nature on a scale much smaller than that of even the embryo. The relevant question is not what size is the embryo, but rather what kind of being is the embryo?

The goals which flow out of sacred awe and practical awe are thus incommensurable. The sense of practical awe invites science to pursue foremost the laudable goal of beneficence, while the sense of sacred awe awakens society to the moral imperative of nonmaleficence. Practical awe and sacred awe may coexist at the moment a new human embryo comes into existence, but they soon part company. For although peeling open the embryo and exposing her stem cells to scientific investigation gratifies the practical awe, that same act annihilates the subject of the sacred awe.

Even at the small scale, medical ethics provides limits beyond which science must not go. At stake in this debate over small things, therefore, are matters of enormous importance. In the remainder of this paper, three key questions will be considered.

First is whether science should be granted unlimited liberty so long as the anticipated benefits are judged to be proportionately appealing. Scientific inquiry is one of the highest goods, but it is not the total good, nor is scientific freedom absolute. Responsible oversight of the scientific enterprise should foster excellent research while taking care not to overrate the promise of science nor to underrate its potential for misuse.

Arguments in favor of human embryonic stem cell research frequently appeal to utilitarian ethical reasoning, which in its most basic

11. *See* William P. Cheshire, Jr. et al., *Stem Cell Research: Why Medicine Should Reject Human Cloning*, 78 MAYO CLINIC PROC. 1010, 1018 (2003), *available at* http://www.mayoclinicproceedings.com/pdf/7808/7808c2.pdf.

12. Nigel M. de S. Cameron, *You Were a "Dot" Once, Too*, (Oct. 19, 2004), *available at* http://www.tothesource.org/10_20_2004/10_20_2004_printer.htm.

formulation seeks the greatest good for the greatest number. Although useful in particular applications, utilitarianism is an incomplete ethical theory that, if applied vigorously, unravels at both ends. At one end it renders judgments on the basis of consequences which in reality are complex and unpredictable. At the other end, it balances dissimilar categories of good that should not legitimately be compared on the same scale. Utilitarian analysis, to the point, is flawed in its treatment of the primary good of human life, in that universal application of its logic would justify serious harm if the potential benefits to others in terms of secondary goods were seen to be sufficiently great.

Absolute scientific freedom would entail authorization to engage in research known to be unethical, yet done anyway. A science guided only by utilitarian reasoning and freed to conduct research destructive to human embryos would turn the Nuremberg Code upside down. Science, to prosper, need not forsake or attempt to redefine ethics. Violating fundamental ethical principles learned from the difficult lessons of history is an unnecessary compromise that, in the final analysis, cannot secure human flourishing.

The second question is whether human life should be subjected to instrumental use. The stem cell debate has moved beyond discussions about taking human life to plans for making life explicitly destined for destruction. Before us lies the unprecedented prospect of a research agenda that would create a class of human life existing solely for instrumental manipulation and exploitation. It is a small task to recognize the huge moral leap of such a project. Those who cherish the founding principles of our country should appreciate that the instrumentalization of human life would cast aside the affirmation set forth in this nation's Declaration of Independence, that all human beings have intrinsic worth and dignity.[13] To codify in law a provision for destructive research on human embryos would mean that the protection of the law would be withheld from certain categories of human life intended to serve merely instrumental roles in society.

Federal bioethics advisory groups serving under both Democratic[14] and Republican[15] presidents have affirmed that the human embryo is a

13. THE DECLARATION OF INDEPENDENCE para. 2 (U.S. 1776) ("We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.").

14. *See* NAT'L BIOETHICS ADVISORY COMM'N, *Ethical Issues in Human Stem Cell Research*, at ii (Sept. 1999), *available at* http://www.georgetown.edu/research/nrcbl/nbac/stemcell.pdf.

15. *See* PRESIDENT'S COUNCIL ON BIOETHICS, HUMAN CLONING AND HUMAN DIGNITY: AN ETHICAL INQUIRY (July, 2002), *available at* http://bioethics.gov/reports/cloningreport/

developing form of human life deserving of respect. To reduce the meaning of respect to treating the embryo as a means to others' ends is an odd use of language.[16] Perhaps the dictionary, like Pinnochio's nose, will lengthen in response. *The American Heritage Dictionary of the English Language*, published here in Boston, defines *human resources* as "[t]he persons employed in a business or organization."[17] Embryonic stem cell research programs would need to solicit the addition of a new word usage. Human resources could also mean, depending on one's view of ethics, human embryos intended as stem cell donors for biomedical research projects.

Third is the question of whether the conscience of a nation, as reflected in its laws, in its professional codes of ethical conduct, and in the values of its diverse communities, will effectively confront scientific misbehavior while the moral conflict is yet small. There is a growing public uneasiness about what many of my patients perceive to be a runaway train of scientismic hubris. One need only glance at the daily newspaper to find regularly occurring reports of attempts at human cloning,[18] creation of bizarre embryo variations combining male and female cells[19] or human and animal cells,[20] patchwork pregnancies with human offspring having as many as five parents,[21] and just this month a proposal abroad to engineer headless humans as organ donors.[22] Some of these projects evade federal oversight administered to research sponsored by the National Institutes of

terminology.html.

16. William P. Cheshire, Jr., *Human Embryo Research and the Language of Moral Uncertainty*, AM. J. BIOETHICS, Winter 2004, at 1-5.

17. THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 855 (4th ed. 2002).

18. *See, e.g.*, Dennis Kelly, *Company Claims World's First Human Clone*, USA TODAY, Dec. 27, 2002, *available at* http://www.usatoday.com/news/health/2002-12-27-baby-clone_x.htm; Laura Ungar, *Doctor Claims He Has Cloned 2 Embryos: Medical Ethicists Denounce Efforts*, COURIER-J. (Louisville, Ky.), Sept. 1, 2004, at 1B.

19. *See, e.g.*, Martin Hutchinson, *Mixed-Sex Human Embryo Created*, BBC NEWS, July 3, 2003, *at* http://news.bbc.co.uk/2/hi/health/3036458.stm.

20. *See, e.g.*, Eugene Russo, *Cow-Human Cell News Raises Ethical Issues*, THE SCIENTIST, Dec. 7, 1998, at 1; *U.K. Law Allows Human-Animal Hybrid Work*, BIGNEWSNETWORK.COM, June 2, 2004, *at* http://feeds.bigneswnetwork.com/?sid=b1f6b14a430bd579; Ying Chen et al., *Embryonic Stem Cells Generated by Nuclear Transfer of Human Somatic Nuclei into Rabbit Oocytes*, 13 CELL RES. 251 (2003), *available at* http://www.cell-research.com/20034/251.pdf.

21. Tim Utton, *The IVF Twins Who Have Five Parents*, DAILY MAIL (London), Sept. 13, 2004, *available at* http://www.dailymail.co.uk/pages/text/print.html?in_article_id=317667&in_page_id=1799.

22. *Science's New Frontier—A Headless Human?*, INDO-ASIAN NEWS SERVICE, Oct. 29, 2004, *available at* http://www.hindustantimes.com/news/72421080368,00180007.htm.

Health by proceeding quietly under private funding. Others locate where the laws are more accommodating. But in most cases the legislative process simply has not caught up to the technology. For the sake of science and the benefits it yields for all, wisely crafted regulations are needed to preserve public confidence in the ethical uses of biotechnology. Even better would be more effective ethical self-regulation from within the scientific community.

There is, of course, disagreement over what constitutes ethical biotechnology, as well as how stringently scientific research should be curtailed so that scientific creativity is not stifled. Countless goals are negotiable, but some are so essential that they cannot be compromised without agonizingly disrupting the moral basis of a society and provoking enduring contention. One such example may well be human embryonic stem cell research and its co-conspirator, human cloning research. Promises of cures have fueled the campaign for genres of research that would have previously been unthinkable. Although promotion of these projects has won the consent of many, it is no small matter that they would also violate the deeply held convictions of a considerable segment of society.

Increasing economic commitments to such research would more likely escalate than relax passionate controversy as more and more people would be asked to participate in its projects. Once medical products were developed or tested using embryonic stem cells, Americans who objected on moral grounds to the destruction of embryos would be expected to become complicit with the taking of life and to breach their consciences in order to have access to the evolving standard of medical care. Not only would innovative treatments be ethically tainted, but also the production of vaccines, the testing of new drugs, and the refinement of existing treatments might upgrade to stem cell methodologies once available. The occasional failures of such research could potentially stir up further contention over such questions as to whom would fall the social and financial cost of caring for those who, in the rush to receive developing treatments, suffered complications such as hyperfunctioning stem cell grafts or tumors. Efficacious medical products could also provoke contention if they turned out to be too costly to be distributed to all eligible patients or if their manufacture necessitated recruiting large numbers of women to serve as oocyte donors.

From a prudential perspective, research programs that do not raise moral problems are more likely to achieve their goals rapidly and be sustainable over the long term. Noncontentious research offers opportunities for people to work together toward medical progress that all can support with an untroubled conscience. Steering clear of highly controversial research paths is the surest way to avoid conflicts between science and law, between science and religion, or between medicine and

ethics.

Imposing upon the American people a contentious program permitting human embryo research and cloning and risking the intensification of moral division is unnecessary. Claims of the alleged superiority of embryonic stem cells over adult-derived stem cells rely on a very thin scientific veneer. The scientific evidence has not at this time established which stem cell type has greater clinical potential, and the case for adult-derived stem cells has not received a fair hearing. Rather, the most visible sources of public information too often have been politically motivated rhetoric[23] or assertions made in seemingly objective scientific language from those with sizeable or undisclosed financial conflicts of interest.[24] To channel resources into controversial research on embryos would also divert precious resources from ethically noncontentious research. Further efforts at serious and open discussion are needed.

In conclusion, it gives me pause to consider that our descendants will one day read in schoolbooks about the biotechnology challenges faced in the early days of the twenty-first century. History will judge how we meet the challenge of human embryonic stem cell research. It falls to our generation to choose which path science will take. Our decisions, our policies, our legislation, our rulings, and our willingness to participate in the debate will determine whether the history books will record experiments on human embryos as a full-blown blunder or a footnote of folly.

In the interest of the common good, we must not permit scientific advances to be secured by any means possible. In medicine, as in law, it matters whether we treat the smallest of our kind instrumentally or humanely. To grow accustomed to viewing early human life as little more than the means to others' ends would ultimately threaten vulnerable human beings at all stages of life, once it was believed that others would benefit from their harm. Good ends do not justify immoral means.[25]

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23. Leon R. Kass, *Playing Politics with the Sick*, WASH. POST, Oct. 8, 2004, at A35.

24. Cibelli et al., *supra* note 6, at 51; Paul Elias, *Biotech Shares Rise Before Stem Cell Vote*, ASSOCIATED PRESS, Oct. 25, 2004, *available at* http://www.rgj.com/news/stories/html/2004/10/25/83617.php; Steven Milloy, *Stem Cell Panel Has Vested Interest in Research*, FOX NEWS CHANNEL, Jan. 25, 2002, *available at* http://www.foxnews.com/printer_friendly_story/0,3566,43880,00.htm.

25. Literature provides welcome guidance on this point. Consider, for example, Gandalf's reply in J. R. R. Tolkien's, *The Fellowship of the Ring*:

> "A new Power is rising…. We may join with that Power. It would be wise, Gandalf. There is hope that way. Its victory is at hand; and there will be rich reward for those that aided it. As the Power grows, its proved friends will also grow; and the Wise, such as you and I, may with patience come at last to direct its courses, to control it. We can bide

My great-grandfather grew up in North Carolina during an era when, under the law, African-Americans were not considered persons. Imagine how our nation's history might have played out if, instead of being installed as a pillar of the Southern economy, the institution of slavery had been rejected from the start. The morality of a culture can, if its citizens exercise courage, rise above the blinding interests of material wealth, sheer power, and prejudicial suspicion. He often remarked, I am told, that in life it is "the little things that count."[26] The little lives also matter.

> our time, we can keep our thoughts in our hearts, deploring maybe evils done by the way, but approving the high and ultimate purpose: Knowledge, Rule, Order; all the things that we have so far striven in vain to accomplish, hindered rather than helped by our weak or idle friends. There need not be, there would not be, any real change in our design, only in our means."
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> "Saruman," [Gandalf] said, "I have heard speeches of this kind before, but only in the mouths of emissaries sent from Mordor to deceive the ignorant. I cannot think that you brought me so far only to weary my ears."

J. R. R. TOLKIEN, THE FELLOWSHIP OF THE RING 340 (Ballantine Books 1982).

26. LAWRENCE FOUSHEE LONDON, BISHOP JOSEPH BLOUNT CHESHIRE: HIS LIFE AND WORK 81 (Univ. of N.C. Press 1941).

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