BRIDGING SOLUTIONS TO THE RELIGION AND SCIENCE CONFLICT OVER HUMAN EMBRYONOIC STEM CELL RESEARCH

by

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DEDICATION

This is dedicated to my wife, Rebecca J. Ericson, who provided valuable advice and unselfish support; and to my youngest son Robert K. Ericson, my backpacking buddy. It is also dedicated to Jonathan, Joy, Joshua, David, Sarah, Andrew, Douglas, and Carolyn Ericson.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Figure Page

ABSTRACT

BRIDGING SOLUTIONS TO THE RELIGION AND SCIENCE CONFLICT OVER HUMAN EMBRYONOIC STEM CELL RESEARCH

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The religion and science conflict over human embryonic stem cell (hESC) research carries high stakes; should embryos be protected as potential human life or should they be studied as possible cures for debilitating diseases? With the current technology, we cannot simultaneously satisfy both of these objectives—it is necessary to destroy embryos to create totipotent stem cells. Both religion and science provide significant inputs to the bioethical aspects of hESC research methods and practices. The data includes structured interviews with clergy, educators, lobbyists, and scientists. To objectively analyze and organize the data, the author developed pre-positioned assessment criteria and the Shared Vision Model. The results include recommendations for fully integrated solutions. As participants recognize their shared visions, problem solving sessions in academic and religious settings could produce widely-accepted solutions, leading to greater respect for both emerging and aging human life.

Chapter 1

Introduction

> Blessed are the poor in spirit, for theirs is the kingdom of heaven.
> Blessed are those who mourn, for they will be comforted.
> Blessed are the meek, for they will inherit the earth.
> Blessed are those who hunger and thirst for righteousness, for they will be filled.
> Blessed are the merciful, for they will be shown mercy.
> Blessed are the pure in heart, for they will see God.
> Blessed are the peacemakers, for they will be called sons of God.
>
> Matthew 5:3-9[1]

The religion and science conflict over human embryonic stem cell (hESC) research carries high stakes; should embryos be protected as potential human life or should they be studied as possible cures for debilitating diseases? With the current technology, we cannot simultaneously satisfy both of these objectives—it is necessary to destroy embryos to create totipotent stem cells. While, both religion and science provide significant inputs to the bioethical aspects of hESC research methods and practices, this is not always communicated adequately. This conflict is not one of science against religion, but rather a conflict centered on the definition of human life. Science provides the tools necessary to determine that definition, but it is not simply a matter of science. Religion also contributes to the definition of life. Both science and religion contribute to the

[1] *The Holy Bible*, New International Version, (Nashville: Broadman & Holman Publishers, 1980), 854.

meaning of life, and my claim is that, by working together, this partnership will be able to resolve the hESC research conflict.

The objective of this dissertation is to compile solutions to the science and religion conflict over human hESC research. Any solution that serves to reduce the conflict will be considered, but because the nature of the conflict involves broad public policy issues and differences in religious belief, and there are no single representatives or organizations that are able to speak fully for either side of the conflict, negotiated solutions will be less encompassing and less enduring than consensus solutions that evolve in a public forum. Because there is no imminent overt violence involved, there is no urgency for a limited short term solution, so my objective is to extend the search to long term solutions that more completely consider all views on stem cell research. The opposing perceptions of (1) the seemingly unlimited health benefits payoff of stem cell research coupled with (2) the perceived immeasurable ethical costs of destroying embryos together have a tendency to become polarizing forces, making enduring solutions especially challenging to discover. Ideas that move the stakeholders closer together or present a significant opportunity to do so will add value to the resolution process.

Productive ideas could be those that are richer in cross-disciplinary ideas, encompassing both scientific possibilities and faith-based concerns. Single-dimensional approaches will likely not provide effective solutions but instead will raise additional objections, requiring even more solution resources. Multifaceted solutions will likely provide bigger payoffs to the immediate conflict and will be more portable to other

bioethical conflicts. Because of the dynamic nature of the biosciences and the deep cultural nature of religion, this conflict represents something bigger than just the hESC research conflict. In the accelerating advancement of bioscience, spectacular technical resolutions to the conflict may arise, a possibility that I will address in some detail later. Though these kinds of breakthrough events would be welcomed by nearly everyone, they would likely shift the focus to some other point in the stem cell debate or to another biotechnical conflict that also hinges on the meaning of human life. My study focuses on the deeper elements related to values associated with the stem cell conflict that may be tougher to resolve, with a goal of working closer to the core of modern science and religion conflicts.

Overview of the Conflict

Nearly every week the media conveys to the public a story involving stem cell research, often claiming breakthrough advancements in the science, though sometimes the stories are repeating incremental results of research that may have been in progress for years. Occasionally the news is about a relatively small change in procedures for a technique that has been reported multiple times before. During the time I have been working on this project there were reports of great progress in South Korea and then revelations that the investigators had fabricated the data in a bizarre case of seemingly alternating unethical procedures and false claims.[2] In my experience, greed and fear are

[2] Cynthia Fox, *Cell of Cells: the Global Race to Capture and Control the Stem Cell* (New York: Norton, 2007), 406.

factors in science just as in any other occupation, including the practice and study of religion. From the start, I was determined not to let news reports of breakthroughs influence the direction and conclusions of my project. So I did not change my approach when things were looking spectacular in Korea. Consequently, my approach did not fall apart even though the technological claims did.

This project is not about the technology, but about the conflict. In my view, the basic conflict transcends both technology and politics. True, there are scientific advances ongoing that could become factors on either side of the issue. Especially in animal testing, there are new technologies emerging such as improved cloning techniques that open up new potential applications for embryonic stem cells. These kinds of technological advances may be adding to the pressure to put less value on protecting potential emerging human life and more value on protecting the living and the dying. At the same time many new ideas for potential therapies involving a variety of health issues ranging from baldness to Amyotrophic Lateral Sclerosis (Lou Gehrig's disease) have emerge. Theoretically, therapies based on adult stem cells could reduce the need for embryonic sources. But these research efforts may not affect the conflict in any significant way, since it raises value-laden issues concerning the beginning and end of live that will be with us for a very long time.

Because the arguments on the religious side tend to deal with human origins, the human soul, and human destiny, concepts that cannot be directly observed in a laboratory, other evidence needs to be brought into the argument. For those who try to apply only the standards of biological science to the issue, there can be only one

conclusion: *since there is no basis for the religious argument, why should anybody object to advancing the science?* Those in the sciences may not understand or give adequate consideration to the serious and heartfelt concerns of the religious.

There seems to be a renewed interest in discussing religion in the context of secular society both in Europe and in the United States. Perhaps one of the drivers of this trend is the rise of religious orthodoxy among the major religions in many societies, and, most pertinent to my study, among Christians and Jews in the United States. Recent dramatic events involving Islamic fundamentalism may prompt the other monotheistic faiths to reexamine themselves in greater depth and in a broader context. Even prior to these events, however, the trend in American society toward a higher profile among protestant evangelicals has made religion a newsworthy item generating both praise and scorn. But even more important, there has been an emergence of a religious Right (not the same as evangelicalism, although perhaps a subset) becoming influential in politics. Though it is a risky to generalize, especially about religion, the religious Right may have served to challenge the perceived unrestrained authority of science with respect to several biological issues.[3] Relevant to my study, the protestant religious Right has banded with the Roman Catholic Church to question the ethics of hESC research. The Protestants and Catholics may be far apart theologically, but they sometimes find significant agreement when it comes to life-values issues.

When the issue of hESC research enters the political sphere, but continues to retain its religious nature, the conflict can intensify. The former Republican senator, John

[3]John C Danforth, *Faith and Politics: How the "Moral Values" Debate Divides America and How to Move Forward Together* (New York: Viking, 2006), 89.

Danforth (R-Missouri), classifies the stem cell conflict as a "wedge issue" purposely introduced to intensify the conflict over moral values.[4] Though this accusation may have a certain measure of validity in local elections, in my research I did not find people approaching the issue in this kind of calculated way. People like those represented in this study really are concerned about the moral issues surrounding the conflict. This is one reason that I believe this conflict cannot be resolved solely in a political context; it should rather be resolved in a religious and academic setting.

Another possible reason for renewed interest in the scholarly treatment of religion and society among those who are both scientific and religious is the opportunity to win the Templeton Prize for Progress toward Research of Discoveries about Spiritual Realities, a $1.5 million prize that was first awarded to Mother Theresa in 1973 before she won the Nobel Peace Prize, making her name a household word. Since 1978, eighteen of the annual Templeton Prizes were awarded to scholars whose work aimed at integrating science and religion. The awardees included John Polkinghorne, Freeman Dyson, Paul Davies, and Ian Barbour, the theorist who provided the framework for developing my analysis schema to be discussed later.[5]

Democratic Normative Approaches

Because the present study considers the hESC research conflict in the context of the United States' political system, democratic theory informs the approach selected to

[4] Danforth, *Faith and Politics,* 54.
[5] The Templeton Prize Canyon Institute for Advanced Studies. "The Templeton Prize," John Templeton Foundation. http://www.templetonprize.org/ (accessed November 13, 2007).

obtain at the kind of solution I am striving for, one that reaches for a consensus-type decision. In exploring the abortion conflict, the authors of *Shaping Abortion Discourse: Democracy and the Public Sphere in Germany and the United States* outlined democratic theories and their roles in shaping norms in society as in the following table.[6]

Table 1.1 Normative Criteria in Democratic Theory

Theory	***Who***	***What and How***	***Outcome***	***Example of Proponents***
Representative Liberal	Elite dominance Expertise Proportionality	Free marketplace of ideas, Transparency Detachment, Civility	Closure	John Stuart Mill
Participatory Liberal	Popular inclusion	Empowerment, Range of communicative styles	Avoidance of premature closure	Jean-Jacques Rousseau
Discursive	Popular inclusion	Deliberativeness, Dialogue, Mutual Respect, Civility	Closure contingent on consensus	Jürgen Habermas
Constructionist	Privilege the periphery and oppressed	Empowerment, Narrative	Avoidance of premature closure	Michael Foucault

- After Ferree, Gamson, Gerhards, and Rucht (Shaping Abortion Discourse, 2002)

Representative Liberal Theory relegates decision making to the elected elite, who are equipped and knowledgeable enough to make decisions for the people. It would be impractical for all of the citizens to get involved in all decisions. Yet the press and other information sources ensure transparency in the decision process of the elected representatives—if the constituents become displeased, they can remove their representatives from office in a future election. According to the theory, this process is a

[6] Myra Marx Ferree, William A. Gamson, Jürgen Gerhards, and Dieter Rucht, *Shaping Abortion Discourse: Democracy and the Public Sphere in Germany and the United States* (Cambridge: Cambridge University Press, 2002), 229.

good way to achieve closure. As applied to the hESC research conflict, it is my view that this is the way our government has attempted to solve the problem, and it has not worked very well. Recent administrations have appointed committees of experts to advise the President on bioethical issues. Administration policies, such as the Clinton decision to disallow human cloning and the Bush decision to fund hESC research with very tight restrictions, can result in a sort of closure, but in my view, they provide little satisfaction to the electorate.

Participatory Liberal Theory empowers formal extra-governmental associations to raise the issues among their representatives, and this serves to bring more outside influences to the decision making process. According to the theory, this process is a good way to avoid premature closure. As applied to the hESC research conflict, it is my view that this is a better way to resolve the issues than the representative process alone. Groups on both sides of the issues such as the United States Conference of Catholic Bishops (USCCB), and The Michael J. Fox Foundation for Parkinson's Research have lobbied their representatives and helped to educate the public to reopen the hESC research issue in a constructive way. These efforts have perhaps influenced Congress to deliberate and establish laws that address specific issues, while contributing to the codification of public norms on bioethical issues. Though far from resolving the problem, at least these processes highlight the complexity of the problem and involve the public more directly in decision making. Predictably, this worthy effort has brought less closure but more empowerment and rationality to the issue.

Discursive Theory allows for the inclusion of the voices of less centrally-controlled and less specialized organizations, allowing for a hearing of a broader spectrum of public opinion. In this approach, closure can be achieved, but only after listening to a greater number of ideas and achieving consensus. Jürgen Habermas admits that in Germany and the United States, most political decisions are reached through representative liberal or participatory liberal processes, but he believes that normative decisions should be reached through discursive theory, involving a range of people representing a wider spectrum of positions. The assumption of proponents of the discursive theory is that the public is more knowledgeable than some may think and is capable of arriving at consensus decisions, when applied to normative questions. As applied to the hESC research conflict, I believe that discursive processes present a better way to solve the problem. Many of the people that I interviewed for this project represent groups that should be part of the consensus crafting process, and some of them have already initiated discursive processes to do just that. For example, the Institute on Biotechnology and the Human Future,[7] the Hastings Center,[8] and various university and denominationally-sponsored dialogues are starting to raise bioethical issues in a more discursive style. The *discursive theory* is the approach that I have chosen to provide a framework for my research as the best way to arrive at a solution to the hESC research conflict.

[7] Nigel M. de S. Cameron," About the Human Future," Institute on Biotechnology & the Human Future, http://www.thehumanfuture.org/ (accessed November 14, 2007).
[8] The Hastings Center, "Bioethics and the Public Interest," The Hastings Center, http://www.thehastingscenter.org/ (accessed November 14, 2007).

Constructionist Theory privileges the peripheral groups that otherwise would have little influence in government. Rather than emphasizing dialogue, the constructionist approach applies narrative to the process. In my view, one of the best examples of the proper use of this approach was in the American civil rights movement of the late 1900's, and perhaps the best symbol of the constructionist approach was the famous speech of Martin Luther King, *I have a Dream*.[9] As applied to the hESC research conflict, society has not yet reached the level of entrenchment and ethical polarization that racial inequality had reached by 1963, perhaps the turning point of the civil rights movement. For this reason, the discursive approach is a more appropriate way to reach the kind of solutions needed for bioethical issues. For example, the right-to-die vs. the right-to-life case of Terri Schiavo in 2005 represented a constructionist approach. The Schiavo story became a narrative, brought to the public by the press, which prompted the U. S. Congress to intervene. But in the beliefs of many, the case provided little or no constructive closure to the end-of-life ethical issues in our society.[10]

Recurring Arguments

In the tradition of the constructionist approach, proponents or opponents on both sides often use selective presentation of f acts and hyperbole in an attempt to be heard, to raise public consciousness and to strengthen their positions in the debate. For example, the fact that there are nearly a half million embryos in cold storage in the United States is often cited by embryonic stem cell research proponents as a waste of resources that could

[9] Kings speech was presented on August 28, 1963 at the Lincoln Memorial in Washington, D.C.
[10] Danforth, *Faith and Politics*, 69.

be used for curing people, *since most of these embryos will ultimately be destroyed*. However, while it is true that most of these embryos probably will never be used for reproduction, it is also unlikely that any significant number of the embryos in storage will ever be used for research either, even if there is a big campaign to exploit that resource. Several of the people that I interviewed believe that researchers would be better off starting from the beginning with proper scientific controls and proper informed consent procedures. Though some of these embryos might still be used in research, most discussions about them have taken on a narrative flavor that causes reactions which are not helpful in resolving the conflict.

Another common argument used by the proponents of hESC research is to point out that virtually everyone, when forced to decide between a human being and an embryo in the case of an emergency, such as a hypothetical case of an in-vitro fertilization (IVF) clinic that is on fire, will always try to save the human being. This conclusion is true but abstract; normally, no one will be forced to choose between an embryo and a fully developed human being; in most real world cases it would be possible to save both or neither. If these points were new ideas, they might have more value as thought exercises, but I found in my research that these arguments have little influence on the other side, and possibly only have become useful as type of sound bite.

Another type of argument that I encountered occasionally was one that over-simplified the conflict and too narrowly limited the scope, such as the idea put forward by opponents to hESC research that we need to stop the killing of embryos first, and then we can come to the negotiating table to talk. This assumes we are dealing with utilitarian

and unethical mad research scientists who are willing to forgo concerns about the ethical issues for the sake of the advancement of science. On the other side there is a similar argument, claiming that the opponents of hESC research are using the issue in order to chip away at Roe vs. Wade, as if there were no moral basis for opposition to hESC research as a standalone issue. I found both of these arguments to lack relevancy in seeking a solution to the hESC research conflict. Part of the solution will have to be to get beyond hyperbolic, over-simplifying, and narrowing arguments.

Relevant History over the Last Decade

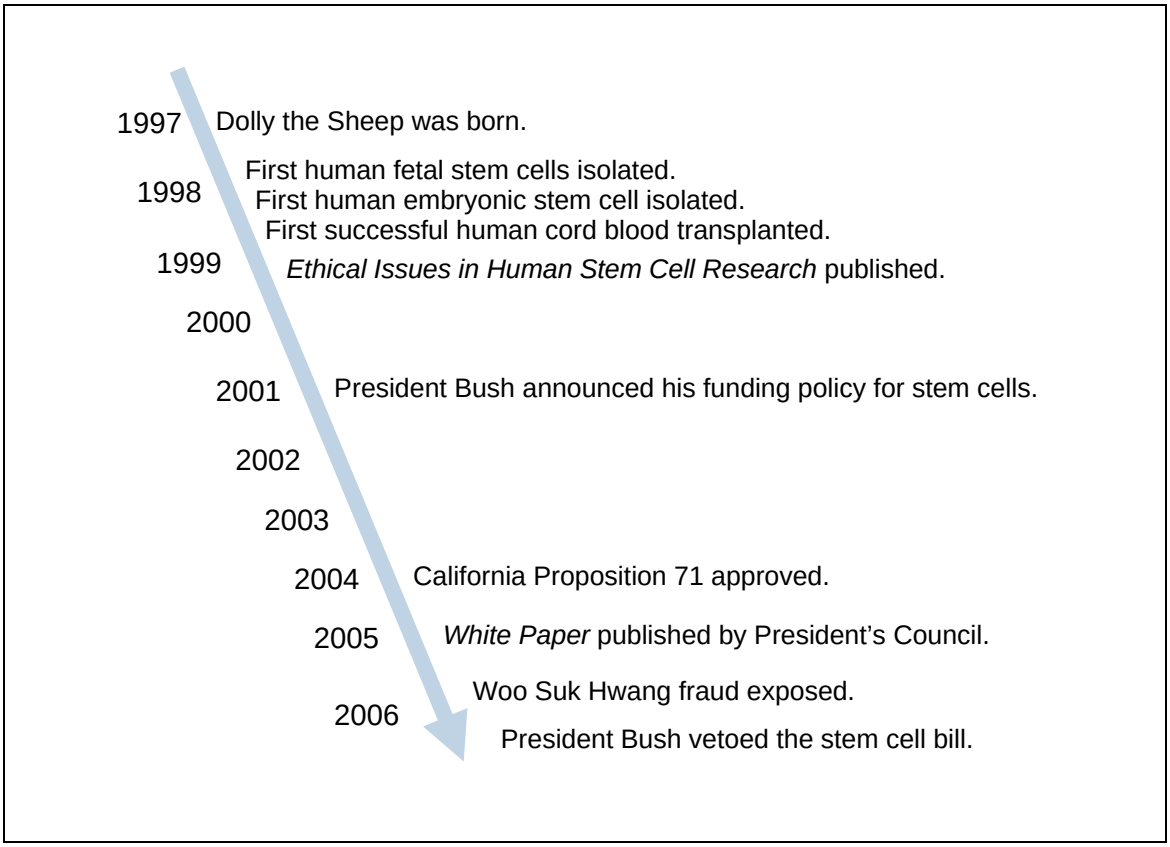

Figure 1.2 Human Stem Cell Timeline

This timeline was derived from multiple sources and includes some of the important milestones in the hESC research conflict starting with the non-human focused event of cloning the first mammal, an accomplishment that many people thought would be impossible. There have been scores of significant scientific and medical advances as well as political changes that I do not include because nothing stands out to me as a major milestone. Most of these changes have been incremental. Below is more detailed summary of each of the major milestones.

Table 1.2 Major Events in Stem Cell Research

1997 – The first cloned mammal, Dolly the Sheep was born at the Roslin Institute in Edinburgh, Scotland.
1998 – The first successful isolation of human stem cells from fetal tissue by John Gerhardt at Johns Hopkins University, Baltimore, Maryland.
1998 – The first successful isolation of human embryonic stem cell lines by James Thompson at the University of Wisconsin, Madison.
1998 – The first cord blood transplant for sickle cell anemia at Emory University, Atlanta, Georgia
1999 – The National Bioethics Advisory Commission (Clinton Administration) issued their report *Ethical Issues in Human Stem Cell Research*
2001 – President Bush announced funding restrictions on human embryonic stem cell research effective August 9, 2001.
2004 – The voters of the State of California approved Proposition 71, $3 billion for stem cell research.
2005 - The President's Council on Bioethics (Bush Administration) published *White Paper: Alternative Sources of Pluripotent Stem Cells*
2006 - Seoul National University announced that the human stem cell research conducted by Woo Suk Hwang was fabricated.
2006 – President Bush vetoed the Stem Cell Research Enhancement Act of 2005.

These event summaries illustrate how new this conflict is, with less than a decade passing from the time human stem cells were first isolated until the time of publication of this document, spanning less than two (two term) Presidential administrations. Though I do not include the details, there have been many scientific advances and potential cures announced, but most have involved non-human or human adult stem cells (hASC). There

have also been several state and local initiatives to fund and promote stem cell research enterprises, in addition to Proposition 71, but few increases in funding at the Federal level.

Research, Analysis, and Documentation Approach

Chapter 2, *Literature* summarizes the relevant literature that I used to develop and execute this project. The conflict literature includes several works by C. P. Snow, the British scientist and novelist who developed the Two Cultures Framework to explain the problem of cross-disciplinary *literacy* in the highly developed nations. This became the beginning point of my study of this particular conflict between two widely dispersed disciplines of science and religion. However, as I proceeded to discuss the conflict with experts on both sides, I found an increasing level of cross-disciplinary work taking place in our society. The pattern for my search for a solution was developed out of Dean Pruitt's Dual Concern Model, a well documented problem-solving approach to social conflict. I derived my methodology for analyzing candidate solutions from these works as well as Jürgen Habermas' Theory of Communicative Action. Finally, in exploring the background literature, I cite the works of practical religious conflict thinkers, Laurie Zoloth and Margaret Farley, ethicists who have not shied away from dealing with the hESC research issue as problem with religion at the center.

For this study, I included several key books in the religion and science literature by Mircea Eliade, Ernst Cassirer, and Ian Barber. The bibliography lists the selected writings of these authors as well as many other publications dealing with bioethics in

general and stem cells and cloning in particular. It was necessary to cover the rudimentary basics of the science in the last part of Chapter II along with some of the recurring terms and their definitions.

Chapter 3, *Setting* includes my perspective on the nature of the conflict and some of the types of arguments that I judged to be detractors from reaching a conflict solution. Along these lines, I argue that to deny that this conflict is religiously motivated is both unrealistic and counter productive. Relating the conflict too closely to abortion is also a mistake, in my opinion, though in discussing the conflict among colleagues and other interested people, I that the idea of distancing the hESC research conflict and abortion conflict from each other was among the more difficult aspects of my approach for many people to accept. I also went into some detail on "slippery slope" arguments at the request of the chair of my committee, because, as he suspected, there is very little in the literature on this subject. In my view, the idea of a slippery slope has very limited applicability in the hESC conflict, but it is one of those concepts that are so difficult to give up, because it is intuitive, though it is not very well supported by research.

In Chapter 4, *Applications Theories*, I go into more detail about the Dual Concern Model and how it informs my research in this conflict. Following that, I provide a short overview of the Theory of Communicative Action and how it can be used as a guide for resolving the hESC research conflict. Finally, I propose my own theory, the Shared Vision Model, one that incorporates all three of the previous major models and theories that I studied. This model attempts to carry my work one step farther to achieve solutions that can not only be acted on, but that may also be more enduring than the common

solutions expressed to date. This model has a strong basis in conflict theory but at this point lacks any robust verification, a project that I hope to pursue in later works.

Chapter 5, *Data* includes details on how I collected the data, and Chapter 6, *Analysis* covers at length the process I used to analyze the data using a pre-positioned rubric of my own design. To me, it was important to draw from conflict theory a pattern of analysis that I would start with and stick to throughout the analysis, a discipline that served to add more objectivity to the project.

Chapter 7, *Solutions* starts by explaining in detail the conflict categories drawn from Ian Barbour: C*onflict, Independence, Dialogue,* and *Integration,* along with one I found it necessary to add: *Innovation*. In my view, the solutions that my research brought to light all fit into one of these five categories. Though all of these categories represent acceptable solutions to conflict depending on the circumstances, for the hESC research conflict, I believe that a progression through the higher order of solutions: *Innovation, Dialogue,* and *Integration,* to be the best . I also summarized the recommended solution portions of each of the interviews, and use these summaries with the permission of subjects. It is extremely important to note that, where I might have misinterpreted a particular statement in the final documentation, I am responsible for the error, not the people who generously shared their valuable time and creative ideas. Based on the data, I developed my recommendations for how we could proceed to resolve the hESC research conflict.

Chapter 2

Literature

Conflict Literature

This study started with the C. P. Snow's two cultures model, which I attempted to apply to science and religion over hESC research.[11] In Chapter III, I explain in more detail Snow's idea that there is a gap between the scientific and literary disciplines caused by a condition of functional illiteracy. I found this idea to be qualitatively true and, in that sense, applicable to the hESC research conflict. Many have questioned Snow's theory, that cross-discipline literacy could close the information gap, impossible to achieve, and actually somewhat undesirable, because specialization has become increasingly important in most fields in the post-industrial society. However, it is possible that the information age is actually reversing the trend toward separation of the disciplines, and the proliferation of information may be a force toward increased cross-disciplinary literacy, creating a potential for unprecedented cooperation. As I suggest later, those involved in the hESC research conflict may actually have a great deal in common with each other, and as more people recognize their commonality, the conditions are set to provide a context for conflict resolution. In my view, there is no clear separation with these kinds of bioethical conflicts, where religion is on one side and

[11] C. P. Snow, *The Two Cultures: and a Second Look* (Cambridge: Cambridge University Press, 1964), 29.

science on the other; that fact makes analysis more difficult but may make resolution easier.

The Dual Concern Model (DCM) developed by Dean Pruitt and his colleagues, outlined in their book *Social conflict: Escalation, Stalemate, and Settlement,*[12] became my cornerstone in seeking out solutions for embryonic stem cell research conflict, and I discuss that in greater detail in Chapter IV. The strength of the DCM is the mechanism for resolving conflicts through problem solving techniques, achieving solutions that are better than mere compromises.

The works of Jürgen Habermas were essential in analyzing the data for this project as well as in crafting solutions, as I explain in more detail in my summary of *The Theory of Communicative Action* in Chapter IV. In addition, Habermas wrote more directly about religion in society in his collection of essays, *Religion and Rationality.*[13] Religion is naturally an element of the Habermas theory of Lifeworlds. For him, language is powerless without the necessarily active elements of theology, science, and philosophy. Theology needs to take on a more important role in linking the meaning of science to our culture. Habermas would encourage more application of theology in Western society.

Habermas also wrote more specifically about bioethics in his book, *The Future of Human Nature*.[14] He discusses stem cells in the context of the timely issue in German politics, pre-implantation genetic diagnosis (PGD). The direct link to my study emerges

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[12] Jeffrey Z. Rubin, Dean G. Pruitt, and Sung Hee Kim, *Social Conflict: Escalation, Stalemate, and Settlement* (New York: McGraw-Hill, 1994), 30.
[13] Jürgen Habermas and Eduardo Mendieta, *Religion and Rationality: Essays on Reason, God, and Modernity* (Cambridge, Mass.: MIT Press, 2002).
[14] Habermas, *The Future of Human Nature*, 16.

from an overlap in the science and the ethics between embryonic stem cell research and PGD. Current PGD methods require in-vitro fertilization so that one cell can be removed from the embryo in the laboratory prior to implantation in the womb. The removed cell can then be analyzed for any genetic defects prior to the decision to select the embryo that will ultimately become a human child. Habermas notes that PGD is especially controversial in Germany because of its history of abuses in bioscience. The technique could lead to a multitude of new genetically-based controversial possibilities in a future world as discussed by Habermas, such as selecting embryos for physically desirable traits such as athletic or musical ability. In the process of completing this study, Habermas spent some time in the United States, and he concluded that we had a long way to go in working through bioethical conflicts, just as he had already found to be true in Germany.

Except for a few writers like Laurie Zoloth, whom I interviewed for this project, in my view there has not been enough effort to bring theology into the debate, in a way that will generate practical solutions to bioethical conflicts.[15] Zoloth places the issue in a uniquely American framework and explores the conflict as a social justice issue. She believes that (1) basic research is an open ended question—an expression of free speech; (2) health care research must be argued in public—no secrecy should be allowed; (3) medicine is a moral gesture—a response to human needs; (4) applications must be done with care—limit the power of knowledge; and (5) we must be informed on the beginning of human personhood—it is a matter of faith.

[15] Suzanne Holland, Karen Lebacqz, and Laurie Zoloth, eds., *The Human Embryonic Stem Cell Debate: Science, Ethics, and Public Policy* (Cambridge, Mass.: MIT Press, 2001), 95.

Another interesting source for a theological view of bioethics that I encountered in my research was Sister Margaret Farley, a Roman Catholic Nun, recently retired from a faculty position at the Yale Divinity School. In her published works, she points out that although Roman Catholics agree on the significant points relative to life values issues, there is still an ongoing discourse on certain aspects relative to the status of the human embryo.[16] Catholics, along with nearly all other religious practitioners worldwide, believe strongly in the sanctity of life and justice toward the living. According to Farley, there is also nearly unanimous agreement among religious people in the United States that the embryo deserves respect, but there is little agreement over the form and substance of that respect. Along with many people of other faiths, in general Catholics do not fully agree over when human life begins and when the soul enters into the embryo.

Though some of the Catholics I interviewed tended to imply that there is full agreement that human life begins at conception, Farley points out that Catholic theologians going back to Thomas Aquinas have often argued that ensoulment occurs sometime after conception but before birth. The case she points out that has a significant basis in science is that the early embryo in the two-, four-, and eight-cell stage has not yet settled on how many human beings may result (twins, triplets, or more), and should not yet be considered to be an individual. She points out that as many as 50% to 80% of all embryos do never reach the implantation stage in the womb in the natural course of a woman's life. According to Farley, many Catholics would find it difficult to accept the

[16] Robert Lanza, John Gearhart, Brigid Hogan, and others, ed., *Essentials of Stem Cell Biology* (Burlington, Mass.: Elsevier Academic Press, 2006), 66.

logical conclusion that over half of the human souls in the afterlife would have never seen the light of day on earth. She contends that these important questions are far from settled among the Catholics, and therefore demand a continuing dialogue, a view that lends support to my conclusions and recommendations that a broader religion and science dialogue is necessary to resolve this conflict.

Religion and Science Literature

The two authors that I read extensively in providing background information on religious anthropology and religious philosophy were Mircea Eliade and Ernst Cassirer. They provide a solid legitimacy to the study of religion in society. These authors imply that religion cannot be ignored and must be integrated into public policy, because it is an inevitable part of Western culture, especially in the United States. It appears to me that no one has contributed as much to the study of the subject of comparative religion as Eliade. For him, religion is an integral part of humanity. When dealing with human bioethics, the definition and interpretation of what it means to be human in the light of religion is certainly legitimate. Eliade's comprehensive view of religion can provide a context for the study of religion and science conflict.

In this study, several of the experts that I interviewed attempted to decouple the conflict from religion, a hopeless objective, in my view, and I discuss my concerns about that approach in Chapter III. Some of those arguing from a secular perspective tried to discount the importance of religion in our society and to dismiss the legitimacy of religious arguments related to public policy. Though we live in a necessarily secular

society, to me there is a backdrop of religion that cannot be ignored. What was even more surprising were the obviously religiously-motivated experts who attempted to decouple science from religion in an attempt to argue their position on purely ethical grounds. Understanding the role of religion in America should be among the useful tools of those arguing many ethical positions. I believe that Eliade would advise against approaches that do not fully recognize the importance of religion in our society.

Ernst Cassirer develops the meaning of humanity through knowledge, symbol, and human response.[17] For Cassirer, reductionist studies of humanity, while perhaps useful scientifically, could never explain the meaning of being human. Language, art, religion, and science all derive from symbolic meaning, and biology occupies a special place in this scheme, falling solidly among the physical sciences in method and practice, but simultaneously being influenced by language, art, and religion while establishing a profound significance in understanding the meaning of humanity. All of the factors discussed by Cassirer contribute to our humanity in critical ways, and along with Eliade, he also emphasizes the importance of religion in Western society. We cannot escape it.

Perhaps among the most common discussion technique I encountered in this project was the tendency to use metaphors or symbols that limit the scope of the discussion, perhaps even cutting off consideration of opposing views. For example, an often used symbol in this conflict is to extrapolate back from an infant to the embryo in such a way that the embryo takes on a role of a very small human that is helpless and in

[17] Ernst Cassirer, *An Essay on Man: an Introduction to a Philosophy of Human Culture* (New Haven: Yale University Press, 1992), 63.

need of protection. Though there may be some ethical validity in this symbol, it also has the result of setting up conditions that leave no room for discussion. Obviously, it would be unethical to experiment on a human neonate, so applying this type of analogy would demand full protection of embryonic stem cells. Taking a different approach of extrapolating back from regenerative medical applications, the embryo can also be seen as a symbol for repaired organs, repaired spinal cords, and curing childhood leukemia, ideas that generate sympathetic feelings among many people.

The 1999 Templeton Prize winner, Ian Barbour outlined a valuable model for dealing with science and religion conflicts which I use as a framework for this study. His principles include four levels of conflict between science and religion; including *conflict, independence, dialogue,* and *integration.*[18] According to Barbour, *Conflict* is the first and least productive level of interaction, but at least with the conflict over hESC research, violence has not yet entered into the picture, and one hopes that it never will. The second level of interaction is *independence,* where each side recognizes the other's right to hold to whatever they choose to believe. The various sides often occupy different worlds and ask different questions. By way of generalization, scientists tend to ask questions about the origins and workings of life, while the religious tend to ask questions about the meaning and practice of life. A problem may be that such a dichotomy is artificial and is not precisely true; the religious <u>are</u> also interested in the origins and workings of life, and the scientists <u>are</u> interested in the meaning and practice of life. Second, approaching the

[18] Ian G. Barbour, *When Science Meet Religion: Enemies, Strangers, or Partners?* (San Francisco: Harper, 2000), 2.

solution using a posture of *independence* does not help to resolve conflicts involving policy, as is the case with the hESC research conflict. The two disciplines may believe they occupy different realms, but they have to interact in some common space in cases where the government must take some kind of action.

The third level for Barbour is *dialogue*, where the two groups listen to each, explain themselves, and give fair consideration to all arguments. Listening and understanding should be the minimum acceptable consideration given to both majority and minority positions in the conflict over hESC research. This may be a necessary approach to conflict when crafting public policy. But this level may still not effectively create practical solutions related to science and religion issues that interface with public policy.

Barbour's final level of conflict is *integration*, where ideas are melded to satisfy both sides in significant ways. This is what my research will be attempting to uncover, including solutions that are better than compromises. Achieving an integrative level of conflict will be one of the elements that I use to judge the quality of recommended solutions to the hESC research conflict. Much of the serious science and religion literature on this subject attempts to, and in my view, sometimes succeeds in presenting integrative solutions.

Bioethical Literature

There has been a nearly exponential growth in bioethical literature dealing with the cloning and stem cells including collections of essays compiled by ethicists,

philosophers, theologians, and other religious writers. Several texts combine primers on the background of the science with discussions of the ethical issue. I found that the essays rarely provide a balanced view of the conflict; nearly everyone has taken a side and attempts to present the best case they can to support their position. Taken in its entirety, this factor has been beneficial to my study, because so many different arguments on both sides have been put forward in exceptionally well-written documents that I was able to pull together to build a solid foundation for the study as well as a good supplement to my own research.

Other than actual scientific papers that are beyond the scope of this project, it appears that nearly everyone writing about stem cells, regardless of their primary objective, also addresses the bioethical issues in some way, though not always from a religious perspective. One notable text that also addresses the religious perspective and has contributed greatly to this project is a well-balanced collection of views surrounding the conflict entitled *God and the Embryo, Religious Voices on Stem Cells and Cloning*.[19] The appendices to this study include a selection of official denominational statements on stem cells and cloning from the Roman Catholic Church, the Orthodox Church in America, the United Methodist Church, the Southern Baptist Convention, the United Church of Christ, the Presbyterian Church (USA), and the Union of Orthodox Jewish Congregations of America.

There are also a number of documents including transcripts available from the President's Council on Bioethics that provide good information on the content and the

[19] Brent Waters and Ronald Cole-Turner, eds., *God and the Embryo: Religious Voices on Stem Cells and Cloning* (Washington, D.C.: Georgetown University Press, 2003), 163.

nature of the public discourse on the subject within the administration.[20] Another good source of information on the science and the bioethics is the National Institutes of Health Stem Cell web site, providing comprehensive information within the web site as well as links to other documentation.[21]

Language and Definitions

Language issues are among both the causes and symptoms of the "two cultures" divide. In this case, the divide between religion and science, language and the meaning of the words themselves become important differences between the disciplines. Both sides use terms that have become part of our vernacular but often carry along crates of semantic baggage introduced by their common use in society. *Embryo* is one of the terms that is important in this conflict and may be misunderstood by many. Though everyone I interviewed understood the meaning of *embryo*, I believe that many in our society confuse the fetus with the embryo. Perhaps scientifically, it would be better to use the term *blastocyst*, but the term is not part of our common language, so I intend to stay with *embryo* to describe the source of the stem cells that are central to this conflict.

Most people are familiar with the unit of study for this project, the hESC, because the concept is frequently discussed in the media, fed in part by scientific advances and press releases sometimes even dealing with old news, and also as politicians and lobbyists periodically raise the issue as part of some political or parochial point that they

[20] The President's Council on Bioethics, "Stem Cells: Recent Developments in Science and Policy," http://www.bioethics.gov/ (accessed November 14, 2007).
[21] NIH Stem Cell Information, "Stem Cell Information," National Institutes of Health, U.S. Department of Health and Human Services, http://stemcells.nih.gov/index (accessed November 14, 2007).

want to make. Stem cells have become a favorite subject for the media because the discovery and potential applications of stem cells are on the cutting edge of bioscience, present exciting possibilities to produce remarkable public health improvements, and yet present a deep value-based challenge to norms. To clarify my subject, it is necessary to review some of the basic science involved.

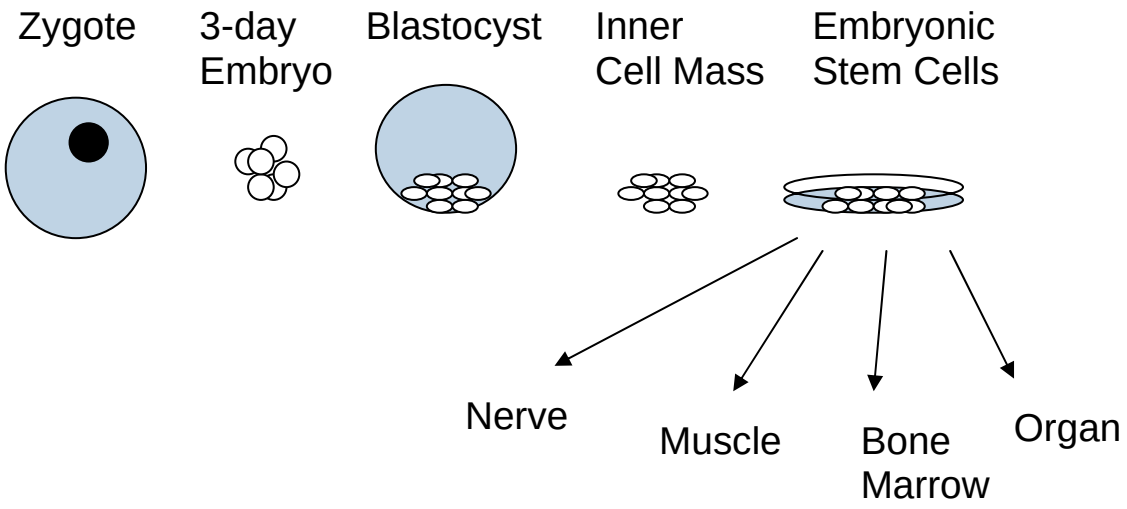

Figure 2.1Growth of Stem Cells from the Zygote[22]

The above figure covers the very basics of the science and puts the embryo in its proper context. Starting on the left, the zygote is the fertilized egg from which the embryo will form, shown as a few cells after a few days. The embryonic cells continue to divide for 5 to 7 days while forming an outer layer of cells to create the spherical blastocyst slightly smaller than the size of the head of a pin and ready to be implanted in a womb. Removing the inner cell mass destroys the blastocyst but is the source of

[22]David. A. Prentice, *Stem Cells and Cloning* (San Francisco: Benjamin Cummings, 2003), 6.

embryonic stem cells that can be grown in a culture and coaxed into cells needed for the body to create or build up tissues such as nerves, muscles, bone marrow, and organs.

While confining this project to the human embryonic version of stem cells, I am continuously mindful of the potential of hASC to lead to cures. Nobody that I interviewed objects in any way to using hASC s in research and therapy, so that alternative does not fuel the conflict; however hASCs also do not provide a solution to the conflict. A common theme that I encountered among those opposed to using hESCs for research is a claim that all of the therapies to date have come from studying hASCs, and that trend will continue into the future. As we will see, this may be a short-sighted view and will not satisfy the need to learn more about the possibilities of hESCs.

Though I remain skeptical, it may be that hASC therapies will become so effective that the hESC research is pushed into obscurity, but that would probably not actually address the conflict. Because hESCs are undifferentiated, scientists are able to coax them into becoming differentiated stem cells with a very real possibility of rebuilding whatever type of cell is needed at the time by a patient: nerve cells for those with spinal cord or brain problems, muscle cells for those with heart problems or muscular deterioration, blood cells for those auto immune or other diseases involving the circulatory system. Unlike hASCs, the undifferentiated nature or potency of hESCs is the critical quality, amplifying the importance of the controversy.

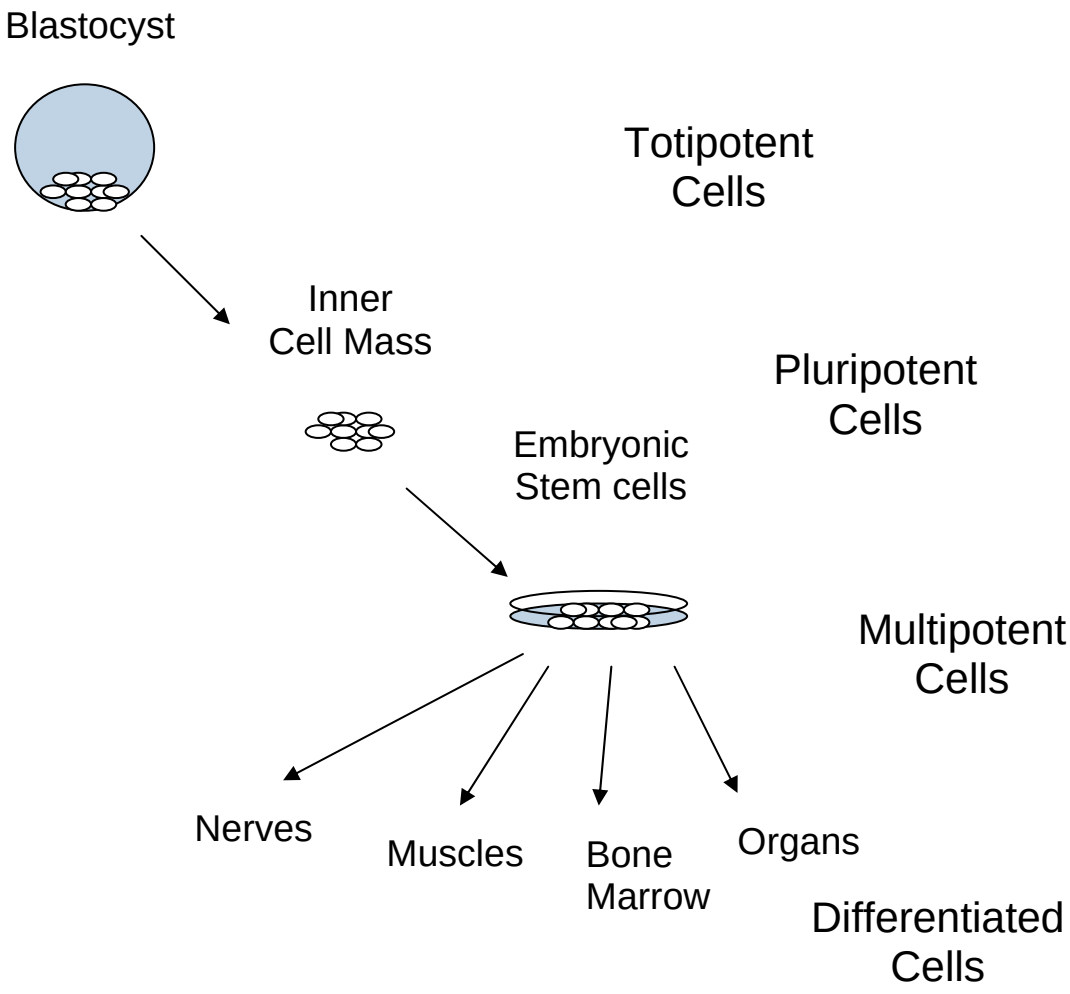

Figure 2.2 Potency of Stem Cells[23]

[23] Prentice, *Stem Cells and Cloning,* 5.

Table 2.1 Descriptions of Stem Cell Potency[24]

Potency	*Description*	*Example*
Totipotent	***A cell that can give rise to the entire organism.***	***Fertilized egg.***
Pluripotent	***A cell that can produce all the cell types of the developing body.***	***Inner cell mass.***
Multipotent	***A cell that can produce two or more different types of differentiated cells.***	***Embryonic stem cells, adult stem cells.***
Differentiated cell	***A specified cell type that carries out a specific function in the body.***	***Nerve, muscle, bone marrow, or other organ cells.***

The above diagram and table illustrate and summarize the concept of potency, perhaps the most critical element of the hESC research conflict. Totipotent stem cells in the blastocyst can produce all cell types in the body including those cells that make up the placenta, and if implanted in a womb can form a complete human being. Embryonic stem cells when separated from the blastocyst and grown in a culture become pluripotent, are able to produce any cell type in the body except the components of the placenta. They are valuable for scientific study and potentially regenerative medicine because they can differentiate into any cell type needed by the body such as nerves or muscles. There is an important distinction between totipotent and pluripotent stem cells; to understand human development from the very earliest stage, totipotency is a necessary quality, since

[24] David. A. Prentice, *Stem Cells and Cloning*, 5.

pluripotent cells have already begun to differentiate. By imposing certain signals, scientists are able to coax pluripotent stem cells to become multipotent cells that can become various types of nerve cells muscle cells, bone marrow, and various cells that are components of organs. This is the differentiation process that occurs naturally in the body and now appears to be a process that scientists may be able to control to be used in therapies that would benefit those in need of regenerative medicine.

Potency becomes an issue because of the scientific value of this particular quality. Totally differentiated cells may actually be better in some therapeutic applications, such as one of the most successful applications of stem cells targeting the specific disease of childhood leukemia using cord blood stem cell transplants to regenerate the ability for bone marrow to create red blood cells. Multipotent stem cells have the additional advantage of becoming one of several types of cells and might have an advantage in the future as stem cells may be created with a perfect genetic match to a particular individual who may need more than one type of cell to be regenerated for multiple health problems or even to be held in standby for some yet unrevealed problem. But pluripotent stem cells can become any cell in the body and therefore present the most versatile source of stem cells for therapeutic use.

Differentiated stem cells are often referred to as human adult stem cells (hASC), perhaps a misleading phrase since their sources may be from umbilical cords or amniotic fluid. But as far as we know the embryo is the only source of pluripotent stem cells. As the science marches forward, these levels of potency become somewhat blurred as some have proposed that potency is more of a continuum and not necessarily even irreversible.

It may be possible to back into a more potent stem cell from a more differentiated stem cell.

In my interview with Morowitz, he expressed doubts that any of these efforts would produce totipotent stem cells. This quality of totipotency not only allows hESCs to become any type of cell in the body but these stem cells have the potential to actually become a human being when put into the right environment, a factor that is tremendously important in studying human development from a biological perspective. That is one reason why, no matter how many cures result from hASCs, there will always be a scientific need for hESC research involving totipotent stem cells. Everyone should recognize that this is an important point in the development of individual human life, either a discontinuity in the flow of development or at least a point where there is rapid change in the nature and structure of the molecules involved in human life. Though we should be able to agree on the basic truths of the science, the disagreement enters the picture as a result of the different values different people attribute to the same materials.

If we were to artificially create two sides to the conflict, the one side attributes nearly priceless value to hESCs because of their nearly unlimited potential to explain human development and cure human biological problems. The other side attributes nearly priceless value to the embryo itself because of its nearly unlimited potential to become a fully developed human being, carrying not only an intrinsic value within itself but a potential future value as well benefiting all or part of society in unimaginable ways. In both cases it may be too early to judge the results. We don't know what the scientific research may bring to society until we actually test it out, a long and expensive process

still in its early stages. At the same time, we do not know what kind of person may result from any particular embryo, perhaps someone who has a degenerative disease that could be helped by stem cell therapy, or perhaps a research scientist who ends up developing the needed stem cell therapy.

On the religion side there are few if any uniquely religious concepts that become factors in the public debate. There are of course no obvious Biblical teachings or stories that directly address the subject, but in another way nearly all the important teachings of both the Jewish and Christian scriptures inform the debate, providing supporting points for both sides, just as the science provides supporting points for both sides. People may forget that the major concepts of truth, justice, healing, and discovery are Biblical concepts. Though the Bible cannot claim sole ownership of these ideas, in the western world Jewish and Christian teachings have been a major influence on how people in our society view the world outside themselves, including other human beings--a factor that is at the core of this conflict after all.

Our language transcends both science and religion; the important definitions in this conflict should be arrived at in a more integrated way than would come from a parochial focus. In nearly every case this process has not yet reached a satisfactory end. There are scientific and religious definitions for human life, but few are large enough to provide much satisfaction for those who occupy both worldviews. At the source, the conflict centers on the definition of human and the definition of life. Some of the literature introduces the issue of the human soul and when the soul first enters a collection of human cells. Though the harvesting of embryonic stem cells is unrelated to

abortion in a strictly physical sense, there are those who extrapolate backwards, considering conception to occur when the egg is fertilized. This is good linear logic, but the concept fails to consider the large number of fertilized eggs that are naturally never implanted in the womb and would not normally be considered to be a lost human life. The argument against this idea is that life actually begins when a fertilized egg is implanted in the womb.

To many whose mission it is to defend life, the embryo is human life, because it has the potential to become a complete human being. Genetically, it is certainly human and since the cells continue to multiply given the right conditions, it is certainly alive by any definition. But, at least for the foreseeable future, the embryo must be implanted in a womb to become a fully developed human being.

An important consideration is the religious question of when the human being gains a soul. For most theologies, this occurs sometime between conception and birth, but theologies usually do not address the idea of a soul occupying the living cells in a laboratory. Science may serve to enrich the concept of soul in the religious language. The literature contains several different attempts to resolve this problem in a scientific way. The simplest view is that the soul enters the embryo at conception, but another is that it occurs after some time later. Using the Farley rationale introduced in Chapter II, each body has a soul, and before it is possible to distinguish how many bodies will be produced, it is impossible to know how many souls are involved, so the individual soul cannot exist prior to that point in human development.[25] There are other church

[25] Holland, Lebacqz, and Zoloth, *The Human Embryonic Stem Cell Debate*, 113.

traditions that assign a soul at much later stages.[26] Some of the religious writers avoid talking about the soul, considering that to be too obscure an idea for the non-religious to accept; instead they attempt to argue their case on purely ethical grounds and avoiding theological concepts. Whether those arguing for research believe in the concept of a soul or not, the idea is too strong and widely accepted to ignore. It may be necessary to include it in bioethical decisions at least in the background as a symbol for a deep respect for human life.

Even in death, nearly every society respects bodies that were once living human beings, referring to them as the remains of a person absent their soul or individual human essence. Abuse of a corpse is abhorrent to most of us and can be the ultimate in demonstrating distain for the former person or even become the ultimate in human punishment.[27] In this case, what is derived from a human being has a potential to become human again, making the embryo sacred to some, and at least deserving of solemn respect to many others.

The conflict takes on a different character at the reservoir of human life, adults during their reproductive stages. Improving the health of adults is something almost everyone would agree with, but where the emphasis is placed can be a source of conflict. The conflict becomes one of balancing cost and benefit. On the scientific side, it has a negotiable economic aspect; could the money spent on stem cell research be better spent on curing cancer or heart disease by more conventional therapies, or should the research

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[26] Waters and Cole-Turner, eds., *God and the Embryo*, 67.
[27] Michel Foucault, *Discipline and Punish: the Birth of the Prison* (New York: Vintage Books, 1995), 3.

emphasis be on the new and promising field of genetic engineering? Could all of these goals be combined into a larger cause, something like a *war on disease*?

Within the religion camp, the cost and benefit issue can also have a negotiable aspect. There is nearly universal acceptance of adult stem cell research and resultant therapies. But for this study, these tradeoff features will be peripheral. This study focuses on the deep seated religious aspects of the conflict over hESC research, which are not negotiable. Going beyond the orthodox view of protecting human life in the earlier stage, there is a significant body of literature in the mode of a social gospel. Proponents bring good news to the afflicted. Those who favor stem cell research, even if concerned about a variety of ethical issues, consider the greater good of healing the living as a significant human benefit outweighing the small impact on what is only theoretically a potential human life.[28]

[28] Waters and Ronald Cole-Turner, eds., *God and the Embryo*, 141.

Chapter 3

Setting

Nature of the conflict

The human embryonic stem cell (hESC) research conflict is partly political, because it usually involves taxpayer funding, institutional oversight, legislative restrictions, high-profile group advocacy, religious doctrine, individual beliefs, and cutting edge technology. The nature of the controversy is somewhat determined by how it is debated in public and how it is measured in popular surveys. At the core of the controversy are value-based ideas, but these ideas are often about *boundaries* that serve to separate competing values. But of course the boundaries are not physical and they do not even resolve into clear discontinuities; they take on a larger role of *symbolism*. But if the controversy is largely political, then it deals with competition for *power*, a concept that we should keep in mind while examining value-based issues. Briefly, here is how I apply these concepts to this case.

Underlying the controversy is a theme of *values*, specifically the value of human life. In the human quest to reproduce ourselves and society, we value both new life (the source of reproduction) and mature life (the reservoir of reproduction), but belief systems influence the values we hold most dear. Although it is risky to generalize about the stem cell issue, in my view, in North America the more conservative-leaning religious groups

often publicly support programs that promote new life while the liberal-leaning groups often publicly support programs that improve mature life. But of course it is not that simple; all sides value both phases of life, and when pressed into a debate on public policy, they defend the values they hold most dear. At the same time, the nature of science is to explore all unknown questions, so there is no fundamental preference for programs that support new life or for programs that support mature life. From the scientific point of view, the controversy appears to derive from the religious community trying to promote restraint at the expense of scientific exploration.

A factor in this controversy is related to establishing *boundaries*. While few would oppose scientific advancement, ethical constraints will always establish limits on human experimentation. While no ethically-focused person would knowingly condone sacrificing a human life for the sake of science, differing ethical standards come up within the context of different definitions of what it means to be human and alive. Stem cell research occupies an important boundary region in the controversy. Have embryonic stem cells reached a level of development where everyone can agree they are both human and alive? No, there is little agreement on this important baseline factor, and different groups will establish the boundary in different places. Their positions may be based on science or on faith, and often are an integration of the two.

The controversy is also about *symbolism*. Embryonic stem cells can be symbols for the unborn who are unable to speak for themselves and whose rights must be defended by those already born. But hESC research can also be a symbol for the rights of the handicapped and those with degenerative diseases, who sometimes may be

undervalued by society. The application of symbolism adds to the significance of this issue. While many would contend that there are plenty of embryonic stem cell sources already available in fertility clinics to accomplish significant research as well as abundant reproduction, others maintain that the destruction of even one blastocyst for the sake of science is symbolic of a society gone wrong. On the other side, allowing hundreds of thousands of these embryos to languish in suspended animation or to be ultimately destroyed for neither research nor reproductive purposes is symbolic of a society that neither cares about human needs nor even to value life itself.

The controversy is related to the application of *power*. Because the direction society takes on this issue will most likely be determined by public debate, the power of politics influences the controversy. In the last general election, stem cell research turned into a national campaign issue, where in my view, the Republicans attempted to exploit the moral value of the sanctity of life and the Democrats attempted to exploit the moral value of compassion for the suffering. In the political arena, the issue can become oversimplified by the use of symbolism, so political solutions may not get at the heart of the issue—they are intended only to delay resolution into the next administration. Although there may be a great deal of depth to the debate within the administration leading up to these temporary solutions, the public may only be apprised of the surface issues, causing dissatisfaction on both sides of the controversy and leading to a need to readdress the controversy in another forum.

Because of the nature of the controversy, solutions will most likely be open-ended. It is unlikely that I will be so fortunate as to see a grand solution that totally

resolves the problem immediately and for the future. The problem is different from many past controversies between science and ideology. The ancient controversy of the physical nature of the universe was eventually resolved by improved observational and mathematical methods as the known universe expanded exponentially. Nor is the problem quite like the modern controversy of evolution vs. creation; mounting observational and intuitive data increasingly support evolution, while in my view, not negating creation as a backdrop.

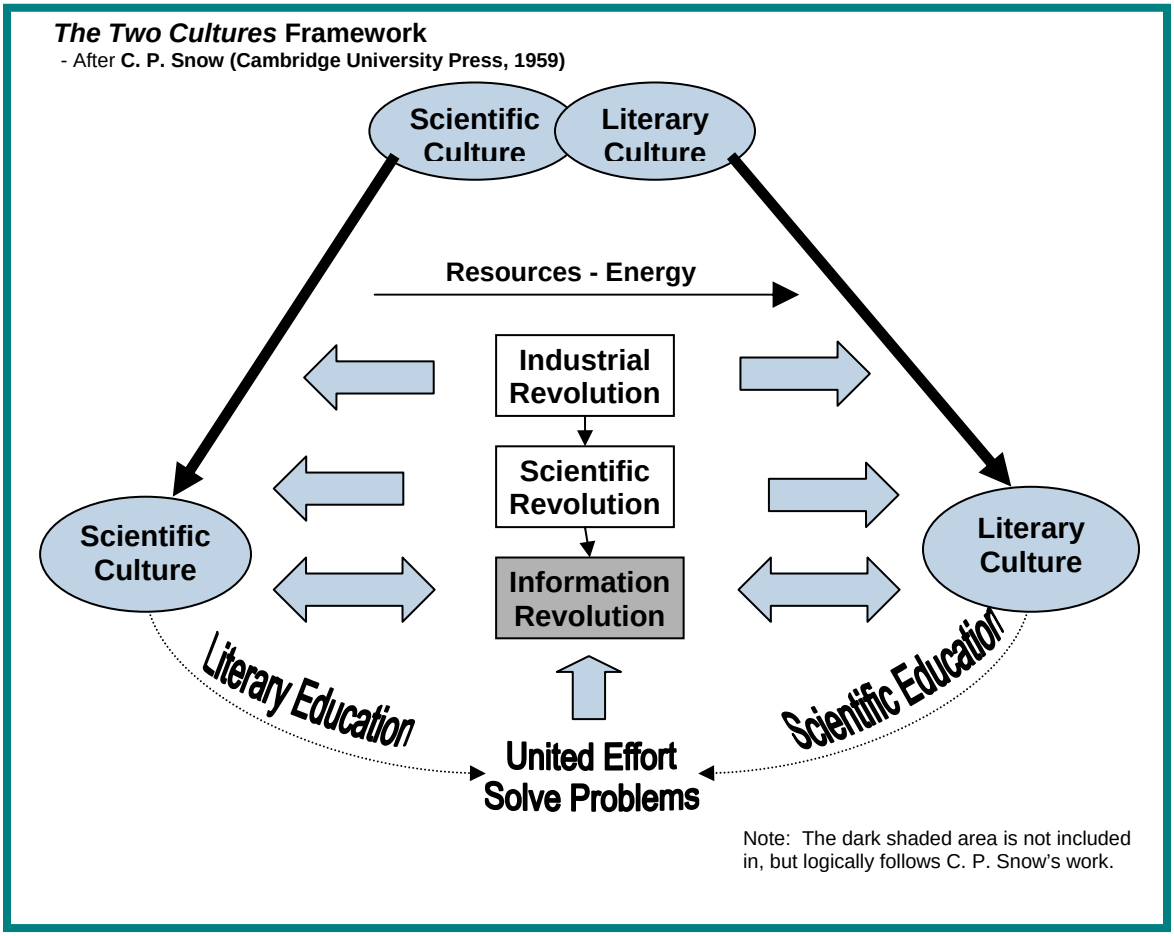

Figure 3.1 The Two Cultures Framework[29]

After World War II, C. P. Snow raised controversy among academics by postulating that there was an increasing gap between the literary culture and the scientific culture among the industrial nations.[30] In his view, inexcusable illiteracy between the two cultures caused this divide. Scientists were not conversant in modern and classical

[29] Snow, *The Two Cultures*, 1.
[30] C. P. Snow, *The Two Cultures and the Scientific Revolution* (Cambridge: Cambridge University Press, 1959), 41.

literature, while those in the literary culture often did not know the basics of modern and classical science. Snow believed that these diverse cultures needed to understand each other and work together to leverage society's resources to solve society's problems. Although Snow's theory is highly intuitive in describing the gap and the problems created by it, there is little evidence to support the notion that the gap is getting larger or that increasing literacy in itself would reduce the span of the gap or improve society in any substantial way. Snow provides an important baseline for the problem while I will have to bring in other more robust theories in search of mechanisms for change.

Snow's cultural gap is largely symbolic. The cultural gap is mostly diffuse in the operational world though these kinds of divides can become quite pronounced among some university departments. When first proposed, Snow raised a significant level of controversy on both sides of the Atlantic. Although the literature directly dealing with this issue is four or five decades old, it does provide a good theoretical basis for my conflict. If the two sides become polarized, they will resemble the cultural gap in practice, a condition that would make a resolution more difficult. The important concept to take away from Snow's theory is the need for cross-cultural literacy. In my research, I found that there is actually a great deal of cross-disciplinary literacy among the experts that I interviewed, and I believe this positive trend encompasses that public at large as well. With that in mind, Snow's theory has less applicability to today's society, and especially to my research. To the extent that this is true, while there are fewer relevancies to the idea of a cultural gap, there is some justification for a corresponding hopefulness that the conditions are in place to promote conflict resolution. Literacy may

be a necessary but insufficient condition for resolving the hESC research conflict; I will explore that idea in more detail in the discussion of the Communicative Action Model in the chapter on theory.

Religion and Science Objections

Several experts interviewed in the research phase of this study objected to the idea that hESC is a conflict between religion and science. Actually, those who objected usually read the title as "Religion **vs**. Science Conflict" thinking of conflict in general as one side pitted against another, as is the case with some bioethical issues such as abortion. I intentionally used a working title that replaced "vs." with "and," considering that science and religion are both stakeholders in the conflict but do not necessarily line up along two sides of a front deeply entrenched in their own positions. It turns out there are plenty of scientific reasons to support or reject hESC research and plenty of religious reasons as well.

The common understanding is that medical researchers favor the embryo as the richest source of pluripotent stem cells. But those who are already using stem cells in therapy often believe that multipotent stem cells show more promise. For example, in my interview with Dr. Casper, he expressed the opinion that more resources should be devoted to umbilical cord blood as an untapped source of stem cells. His team has already cured at least five children of leukemia using stem cells derived from cord blood. He also believes we are on the verge of coaxing nerve cells to emerge from cord blood. For him, embryonic stem cell research lacks the promise of finding cures in our lifetimes.

However, most bioscientists, even though they may have other interests themselves, probably voice strong support for hESC research as a solidarity demonstration for those who are interested in hESC research, while perhaps recognizing that the objective has more to do with basic science than with actual immediate regenerative medical applications.

Scientists themselves are quite often religious, in my view, nearly in the same proportions as a cross section of the American population when it comes to religious practice and preference. C. P. Snow believed that in the UK, scientists were slightly more likely to be religious. Both of these claims would be difficult to prove, partly because of the lack of agreement over the definition of what it means to be a scientist, and partly because religion in the United States is usually a private matter. It would be incongruous for a scientist to include a belief statement in a scientific paper, although in books intended to be works placed in a broader context that include philosophical elements, scientific professionals may include information of a personal nature relating to beliefs. For example, Francis Collins objects to what he considers to be a common misconception that a rigorous scientist could not also be a serious religious believer. [31] Along these lines, it is noteworthy that Harold Morowitz includes metaphysical ideas at the end of most of the chapters in a recent book.[32] According to my general interpretation of their writings; Elide, Cassirer, and Habermas also believe that no matter

[31] Francis S. Collins, The Language of God: a Scientist Presents Evidence for Belief (New York: Free Press, 2006), 6.
[32] Harold. J. Morowitz, *The Emergence of Everything: How the World Became Complex* (New York: Oxford University Press, 2002), 23.

how hard secular society tries to shed religion, it is deeply embedded in our western culture.

Even more complicated, there is by no means a single religious position on hESC research. Just as with other polarizing religion and science conflicts, there are strong religious principles to support either side. The more publicized religious view is to consider the embryo to be a human life deserving of dignity and worthy of protection. But another view emphasizes the dignity of the already fully-formed living being, believing that if hESC research can prolong life and relieve suffering, it should be pursued on ethical grounds. But is this conflict about religion or a more secular-based morality?

If we were to take a vote today to determine the depth of American support for embryonic stem cell research, proceeding with the research would win the election and protecting the embryo would lose. Based on the most recent poll data from The Pew Research Center there would be a landslide victory with 56% voting to conduct the research, 32% voting to protect the embryos, and 12% unwilling to take a position. In a series of five surveys starting in 2002, Pew found that there is a trend over time toward greater support of the research, so public support for the research will probably be as strong or stronger in the future as it is today.[33]

[33] Pew Research Center, "GOP the Religion-Friendly Party, But Stem Cell Issue May Help Democrats" (Washington, D. C.: Pew Research Center, 2004).

Table 3.1 Trend in Support for Stem Cell Research (Pew Research Center)

Conducting stem cell research is important.	Mar 2002	Aug 2004	Dec 2004	Jul 2005	Jul 2006
Total (100% of population)	43	52	56	57	56
Protestant (56%)	38	48	52	49	57
Mainline Protestant (21%)	51	66	69	71	73
Roman Catholic (23%)	43	55	63	61	58
Evangelical (38%)	26	33	33	32	44
Secular (11%)	66	68	70	77	72

But there is a strong religious opposition to conducting embryonic stem cell research because the process destroys the embryo, a form of human life and a potential full-term human being. In the same hypothetical election, if we were to throw out the votes of all citizens who claim to have some religious affiliation, there would hardly be a reason to discuss the issue; 72% of the self-professed secular population would have voted for conducting the research in 2006 and only 14% would have opposed it. This religious bias helps us to understand the problem as indeed resulting from a conflict between religion and science. When Pew conducted the survey, the pollsters understood the problem to relate to religious beliefs as well as other sociological factors.

Abortion-related Arguments

Many people favor or oppose hESC research for the same reason they favor or oppose abortion. But several of the people that I interviewed believe that the hESC research conflict has little in common with conflicts over abortion. Although no amount of observational data or theory can fully resolve reproductive rights issues, it is important and fortunate that hESC research and abortion are far different in many of their more significant conflict elements. There is actually more hope for achieving satisfying solutions to the stem cell research controversy than a solution to the abortion conflict. Compared to abortion, the nature of this controversy is not as polarizing, many of the related issues are fresher, and the set of possible solutions is more diverse.

Some of the experts I interviewed, while supporting pro-choice principles, believe that they do not associate their own hESC research advocacy with the abortion issue, but they do attribute this association to the other side. They believe their opponents are truly basing their hESC research objections predominantly on their pro-life beliefs. There is a tendency on both sides to believe the other side is actually focusing the issue on abortion and forcing its pre-conceived beliefs to cover cases outside the womb. Among many opposed to hESC research, this type of simple pro-life position, equating the issue to abortion, is an over simplified but convenient logic to use. While the term pro-life works well when applied to the abortion issue, it may not work as well when applied to the embryo outside the womb. "Pro-life" could mean pro-embryo, or it could mean pro-medical therapy. Many pro-life Protestants are against hESC research while enthusiastically participating or supporting in-vitro fertilization (IVF). Because of the

American practice of creating excess embryos in the IVF process, partly as medical practice but even more based on economic efficiency, the problem of disposition of the unused embryos causes significant inconsistencies in some pro-life Protestant Lifeworld-derived actions. Bearing a child by this method is not pro-life when the process is taken as a whole. But that is another reason why this issue has little to do with abortion, and why the pro-life label is misapplied.

For the Catholics it is different; church doctrine is opposed to creating embryos in the laboratory for any purpose including reproduction. This position could be better described as a pro-natural life stance. The official church position does meld the concepts of abortion and hESC research together, but the Catholic laity has to reconcile their Church-influenced Lifeworlds with their American secular religious-influenced Lifeworlds.

For some Catholics and Protestants there is another aspect to the problem of attributing abortion-type motivations to their opponents. They consider the destruction of embryos for research to be another manifestation of deteriorating moral principles in society; first the horror of abortion, then killing embryos for research, and finally turning women into egg producing machines with the purpose of creating research materials, a sort of a slippery slope argument.

Slippery Slope Arguments

Bernard Williams has claimed that almost all objections to embryonic research are variations on the slippery slope argument.[34] When it comes to bioethical issues opponents are concerned that if we take the next step in biological research we will be on a slippery slope that leads to an end that most people would not want, a horrible end as Williams describes it. In the late 1980's, a common argument in the United Kingdom (UK) was that if the British allowed research on embryos it will ultimately lead to research on neonates, a practice that clearly almost everyone would consider to be unethical. Williams faced the big question at the time, *is the embryo actually a human being*?

When related to the type of slippery slope arguments that Williams wrote about, the focus can be on the somewhat erroneous idea that it is impossible to distinguish between one stage and the next in human development; therefore the embryo must be a human being.[35] Though not always stated by those that I interviewed, several of them took the position that the embryo was already a human being and needed protecting by society just as a living child would. It is not right to sacrifice even one human being for the sake of a greater good for society. That statement would be universally accepted as noted by some of the experts that I interviewed. But as some of the proponents of hESC research pointed out to me, the statement falls apart if we do not allow the assumption

[34]Bernard A. O. Williams, *Making Sense of Humanity and Other Philosophical Papers, 1982-1993* (Cambridge: Cambridge University Press, 1995), 213.

[35] When I attended the training conducted by Father Pacholczyk, he asked the participants, "What is wrong with this statement? 'The embryo is a potential human being.'" The answer: "It is not a potential human being; it <u>is</u> a human being."

that the embryo can be classified as a human being. Of course the definition of a human being is not nearly so simple.

In the slippery slope theory proposed by Williams, he addresses the argument in the context of the problem of defining a human being. His outline treats the argument as a step-by-step progression quoted below:

- "Human being" is an absolute term.
- Development is a gradual process.
- Development ends in a human being.
- If development starts with a non-human being, there must be a cut-off point.
- Any cut-off point is arbitrary.
- There cannot be an arbitrary cut-off point.
- Therefore, development must start with a human being.

This logic is what Williams refers to as the *arbitrary result* slippery slope argument. To Williams the argument breaks down with the fourth bullet, and he asks, "Why should anyone accept the assumption that there must be a cut-off point?"

There is another place that the logic breaks down--why should we accept the assumption that any cut-off point is arbitrary? Morowitz and James S. Trefil discuss the definition of human life in the context of bioethical norms, when they explore a key question in the hESC research conflict, *when does an individual life begin*?[36] For Morowitz and Trefil this is an unanswerable question from a scientific perspective.

[36] Harold J. Morowitz and James. S. Trefil, *The Facts of Life: Science and the Abortion Controversy* (New York: Oxford University Press, 1992), 6.

There are actually many answers but the answer depends on one's definition of human life. The scientific definition of human may be simple: biological material containing human DNA. The individual life could begin at the embryo stage for people who define life as beginning at conception. But life could also begin at implantation or even at birth. Individual life begins at the point where the genetically human material reaches a state that meets whatever definition of the existence of an individual life that the questioner selects, a necessarily circular argument. In discussions with Harold Morowitz, he said that this slippery slope argument is erroneous because there are at least three distinct cut-off points between the embryo and the neonate: implanting the embryo in the womb, the burst of synapses in the cortex (about the seventh month of pregnancy), and the birth of the child. In the hESC research conflict we are not even approaching these stages, and these cutoff points are natural barriers to the *arbitrary result* slippery slope—society would have to make major ethical decisions before proceeding beyond any of these cut-off points. In my view, the *arbitrary result* slippery slope, as described by Williams, is not to be feared in the context of the hESC research conflict.

The other type of slippery slope argument, as described by Williams, is the *horrible end argument*. That is where the bottom of the perceived slippery slope reaches a point so horrible that nearly everyone could agree to oppose that track, such as the example Williams uses, performing research on neonates. This argument may be used for effect, and in this study I avoid this type of hyperbolic argument by limiting the conflict and solutions strictly to the pre-implantation stage of the embryo. In today's technology, an embryo could never become an actual human being as defined by

Williams and most other people if it is not implanted. Even prior to reaching that state, in the non-implanted embryo stage there is already at least one criterion that some already use as a cut-off point to logically put the brakes on research, the 14 day old embryo. The preferred time to extract stem cells from the embryo is 5 days after fertilization, well before the 14th day when twining is first possible. The logic of establishing the 14th day as the cutoff point is that the embryo could not be scientifically described as an individual prior to that time. By codifying either of these cut-off points into these into law we could diffuse *horrible end* slippery slope fears.

In fairness to those who oppose hESC research, none of those I interviewed directly addressed any *horrible end* slippery slope arguments. However, *arbitrary result* slippery slope arguments were common place. The Williams' example, the belief that the embryo is a human being, is one such argument. Another closely related argument I encountered was a claim by those who oppose hESC research that they are not concerned about a slippery slope; they in fact are concerned about going over a cliff when society allows hESC research, in other words an extremely steep slippery slope. Another such argument goes backwards in time, stating that we got onto a slippery slope when we first allowed in-vitro fertilization. Though that may in fact be a valid slippery slope argument, most people would not describe the condition we are in now as already at a horrible end. On the contrary some of the people that I interviewed described the future possibilities of hESC research as a gift from God.

Chapter 4

Applications Theories

Dual Concern Model

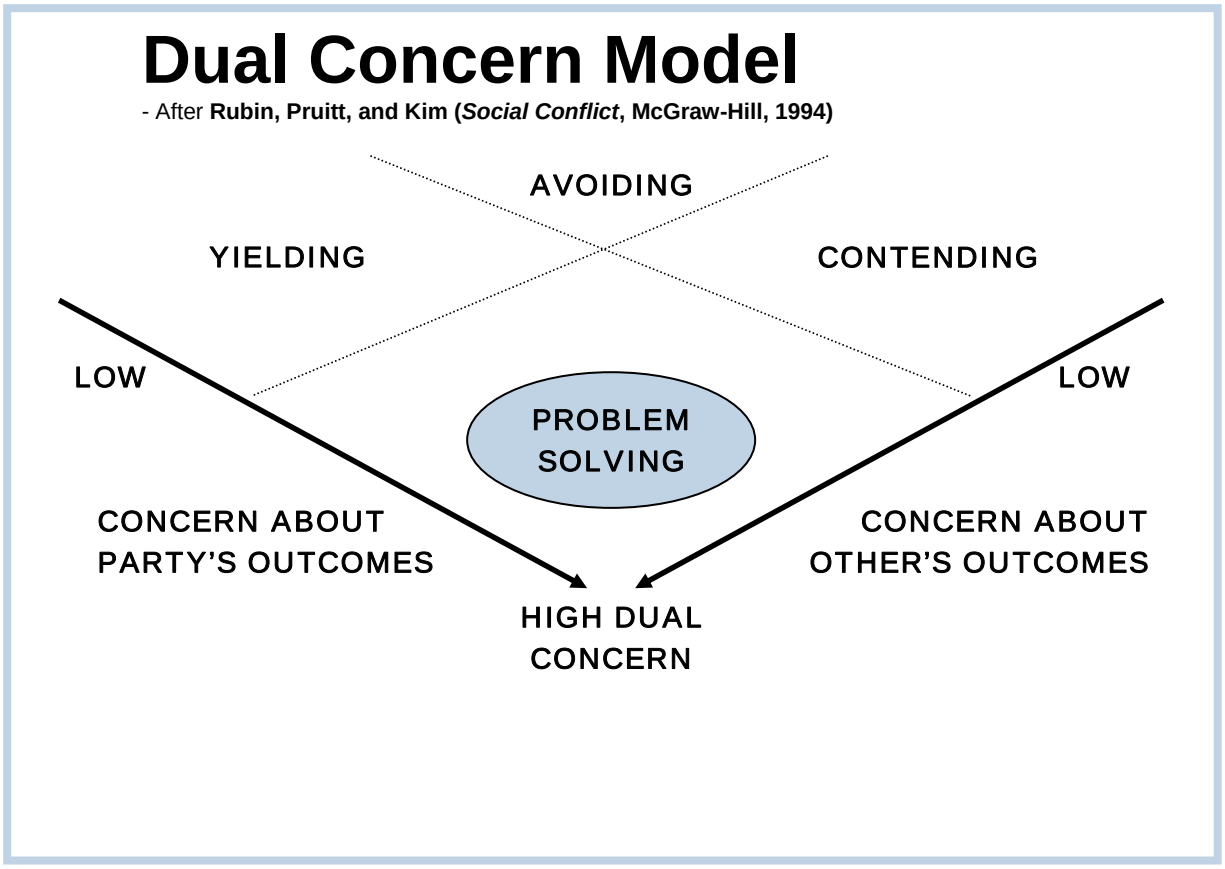

Figure 4.1 The Dual Concern Model [37]

[37] Rubin, Pruitt, and Kim, *Social Conflict*, 30.

Continuing on with the idea of a polarized society, characterizing the divide in a different way from Snow's simplified model, the dual concern model provides the basis for a conflict resolution theory that I apply in a more practical way to the problem. The dual concern model is a straightforward and well-researched theory that has been applied to a wide spectrum of conflict types.[38] The model's wide popular application may be partly due to its intuitive nature; if each contending party is concerned about the interests of the other, it is easy to see that they will tend to craft solutions that are acceptable to the opposition. What is perhaps not quite so intuitive but nevertheless true, is that the parties also need to be concerned about their own interests. Concern for the other's interests but not their own interests leads parties to yielding. Yielding can lead to more conflict as an underlying problems are not solved, recur, and the opposition's demands tend to become greater. The best solutions, the real problem solving solutions, will emerge from situations where one and preferably both sides put a high value on their own interests and simultaneously on the other's interests. If both sides are high in dual concerns, they can broaden interests, and the likelihood of generating good solutions is enhanced by the opportunity to engage in problem solving discussions.

These kinds of win-win solutions were made popular by Fisher and Ury[39] in the conflict negotiation field and by Stephen Covey[40] in the business and government sectors. These groups have found that in a variety of conflict scenarios, people who care

[38] Rubin, Pruitt, and Kim, *Social Conflict*, 11.
[39] Roger Fisher and William Ury, *Getting to Yes: Negotiating an Agreement without Giving In* (London: Arrow Business Books, 1997).
[40] Stephen R. Covey, *The 7 Habits of Highly Effective People: Powerful Lessons in Personal Change* (New York: Free Press, 2004).

about the needs of others while attempting to meet their own goals have been successful in business as well as personal relationships. These kinds of win-win problem solving conflict solutions are enduring; if you want to stay in business, you cannot continuously yield, allowing the other to win. At the same time you cannot set out to win at the other's expense if you want to do business with that party again or anyone else who knows of your ruthless approach to competition.

The dual concern model is usually applied to situations where the parties are well defined and their needs are discernable. The needs may not be revealed or even clear as the conflict emerges, but part of the problem solving approach to conflict resolution is to explore and define needs. The question relevant to this project is: does the dual concern model apply and will it work in the type of conflict that I am studying here? The parties are not sitting across from each other at the negotiating table capable of focusing energy on finding win-win solutions. As expressed earlier, although the primary elements of this conflict include religion and science, this is not a clearly defined conflict between religion and science. Perhaps Snow is right that scientists are more religious than the non-scientist population and may have great sympathy for all sides of the issue. If this is true, we would expect to see improved conditions for problem solving, but this does not seem to be the case. In addition, the religious appear to be nearly equally divided on their opinion of using hESCs for research purposes. We could set up some type of negotiation between parties favoring and opposing hESC research, but what would we accomplish? They would not be able to properly represent their fiercely independent constituents even if they could claim to have a clear set of constituents among the US population. People's

motivations are far too complicated to define simply enough to enable us to set up reasonably representative negotiators.

In this study I am attempting to find solutions that lie in the problem solving quadrant, solutions that are better than compromises, and the dual concern model presents the conditions necessary to get to these kinds of solutions. In this case, for those who are focused on a particular ethical position and not interested in seriously considering opposing concerns, the result will be contentious. These ethical positions could be religion based or scientific based; they could be doctrinal or axiomatic; but either way there may be little interest in understanding or accommodating the opposition. Yet I am interested in studying those who hold firm values on the issue. There is no need to study groups that are willing to yield to the other side or avoid the issue as being unimportant to their value system. I also recognize that there will be a substantial number of people that will be unwilling to give ground in any meaningful way or even seriously consider problem solving solutions, but it is unlikely that their arguments will meet any of the tests that I establish to identify candidate solutions under this study.

Avoiding, contending, yielding, and problem solving are procedures or strategies that stakeholders may choose to endorse. The best action-based technique is problem solving. Especially with this conflict, compromise is not a very good option. If one believes that the human embryo is in fact a living human being, then any solution that involves destroying the embryo would be unacceptable. Not only is a compromise undesirable, it may be impossible. If one believes that scientists need to directly study human development at the very early stages, there is no way to do that except by

destroying the embryo.[41] For example, the well-known political compromise over the stem cell research conflict instituted by President George W. Bush, to allow federal funding for research on stem cell lines produced before a specific, but almost arbitrary date of his announcement, resulted in an especially unsatisfactory compromise. Few ended up endorsing the idea. For those against destroying embryos, what does it matter that the destruction was done by someone else at another time? For those favoring research and desiring fresh embryos developed in a more controlled environment, what is the difference if the stem cells were created before or after a seemingly arbitrary date selected by the Administration, and why not relax the rules to allow stem cells developed before another later date that takes advantage of new technologies and new research objectives? This kind of compromise may appear to be a good idea to policy makers before the public announcement, but it is the kind that seldom works out as well in practice.[42]

Using Rubin, Pruitt, and Kim's categories of integrative solutions, it is possible to predict the types of problem solving solutions that should be included in the suite of solutions for the hESC research conflict. It is important to remember what should be obvious; it is best when all parties are involved in the problem solving process in order to properly identify needs, the first step in problem solving to engage in a give-and-take about possible solutions.

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[41] I will discuss later a class of proposals that may be able to create embryonic stem cells in a way that would not technically kill embryos.

[42] The Clinton Administration crafted an equally unsatisfactory compromise when instituting the "don't ask-don't tell" policy with respect to homosexuals in the military; neither side achieved their objectives nor was happy with the compromise.

Expanding the Pie[43]

One way expanding the pie could work in resolving this conflict would be to greatly increase the amount of basic research money available for all types of stem cell research through federal funding. Among those I interviewed for this project, most of the scientists and the other proponents of stem cell research expressed the view that all avenues of research should be pursued to find sources of regenerative medicine. Until the resources are made available and the researchers are able to study the different types of stem cell sources, there is no way of knowing exactly how the results will turn out. Imagine how proponents would react to a campaign focused on results, where they could expect researchers to discover a number of substantial cures for debilitating diseases and crippling injuries. One of the common complaints among those desiring cures is the slow pace of the research, and if the key to regenerative medicine lies in stem cells, then a surge in spending on research using all types of stem cells should result in substantial public benefits. For those who believe the results will come primarily from non-controversial differentiated adult stem cells, this solution could validate that belief. For those who believe substantial results will be derived from basic research while studying human development at the very beginning of human life using embryonic stem cells, this campaign could validate that as well. It is true that there will still be objections to the destruction of embryos among some groups, but the benefits that result may reduce the objections for many people who occupy the middle ground. It is not that those with strong beliefs will be happy, but rather that they have more information, either validating

[43] Rubin, Pruitt, and Kim, *Social Conflict*, 173.

their views or causing them to modify them. My observation is that the opponents of hESC research so often use the argument that nothing will come out of the research—the regenerative medicine breakthroughs to date and probably into the future have come from hASC research. If their position is validated in this expanded research effort, in my view, there will be less enthusiasm for hESC research in our society and vice versa.

Nonspecific Compensation[44]

In the idea of nonspecific compensation as a problem solving method, people who make concessions do not necessarily get compensated directly, but they may gain some other benefit that makes up for it. The key is to understand what compensation would indeed be valued. There is a form of nonspecific compensation playing itself out almost spontaneously in the hESC research conflict. Right now, federal spending on hESC research is both limited and restricted, meaning that those who would like to expand the research cannot achieve their goals in the way they would like to proceed. Though there is no formal negotiation involved, many Americans see this as unfair and are attempting to do something about it, finding way to indirectly compensate, achieving the same goals by another means. As states and localities fill in the funding gap for hESC research, those looking for results begin to benefit, while those objecting to using federal tax dollars for research involving the destruction of embryos, do not have to compromise on their beliefs. Both sides benefit directly or indirectly during the process. Those favoring hESC research do enjoy some public funding for the science, while those opposed avoid

[44] Rubin, Pruitt, and Kim, *Social Conflict*, 174.

the issue of using federal tax dollars for something they do not believe in while they enjoy a robust democratic process at the local level. If the local standards are especially sensitive to the issue of destroying embryos, local elections will not support using local funding. If the local standards are especially sensitive to the promises of regenerative medicine, elections will support local funding, but in the end the democratic process prevails. Most people I interviewed either favored the idea of state or local governments providing funding for hESC research or at least they did not object very strongly. As with other moral issues such as pornography, local standards seem to carry considerable weight in public opinion.

Logrolling[45]

Logrolling is a form of nonspecific compensation where each party is willing to concede on a small issue of low priority that happens to be a high priority for the other. This approach does not seem to be realistic for those in conflict over hESC research; there can be no compromise over the basic issues involving the question of when human life begins. There seem to be no small issues; there is perhaps only one big issue: is it morally acceptable to destroy human embryos to obtain materials needed to study the earliest development of human life? Some on both sides have proposed prohibiting human cloning as a potential small issue that could be negotiated. But this idea also does not work: in my research, I couldn't find any serious biological scientist who thought that creating fully developed human clones would be a good idea and could be justified

[45] Rubin, Pruitt, and Kim, *Social Conflict*, 176.

for the sake of science. Naturally the religious also disapprove of this type of cloning. So everybody is in agreement and there is nothing to negotiate. But then there is a type of human cloning that brings us right back to the same controversy we find in the current hESC research conflict: Somatic Cell Nuclear Transfer (SCNT) for therapeutic purposes. SCNT may be the key to effective stem cell therapies, where stem cells could be created using genetic materials from the patient, so that the product needed for regenerative medicines is genetically identical to the patient. Even for the vast majority of people who are against reproductive cloning, this type of cloning may be different. It could be acceptable to many if it is relabeled as therapeutic cloning. For those against hESC research, the SCNT solution is no better because it is simply human cloning; to them there is no difference between therapeutic and reproductive cloning.

Bridging[46]

Bridging solutions, where neither side achieves their initial objectives, but a new solution is created that satisfies the needs of both sides, are the types of solutions I am looking for in this study. Again, it is desirable that both sides be involved in crafting these solutions though they can be generated by one side if that party understands the interests of the other. In my research I found that in many cases there were elegant bridges designed, but done so without bothering to consult with or otherwise consider the other party. That approach is unlikely to result in a bridge that is capable of resolving the conflict in a lasting way. These types of bridging solutions may not be immediately

[46] Rubin, Pruitt, and Kim, *Social Conflict*, 178.

viable, because of the lack of serious dialogue so far, but they need to be pursued aggressively before the nation becomes polarized over the issue, as has happened with the abortion conflict.

Linking to Habermas' theory, these bridging options may be limited by an individual's Lifeworld so the choices for good solutions may not be very simple. The goal of this study is to find good solutions that will cause changes of strategy, or at least processes that lead to solutions, such as moving people from the contending quadrant and into the problem solving quadrant. To get there, solutions may have to dig way down into people's Lifeworld. Of course, there may be many ways to alter a Lifeworld—for example: education, public policy, incentives, dialog, logic, and empathy. Good solutions may arise out of scenarios created by groups who strongly hold dual concerns already, or may arise out of singly concerned groups that can be challenged with good arguments. Pulling many ideas together will result in good solutions that could ultimately be transported to other contentious cases, pushing groups toward the desired problem solving quadrant.

Lifeworlds

The idea of Lifeworld as applied to scientific reasoning goes back at least to the writings of Edmund Husserl. Though in German the literal meaning of Lifeworld, *Lebenswelt*, is the "world as lived," to Husserl it has a far richer background and meaning.[47] Lifeworld includes the world as it is given and as it is understood. Science must assume that the world is given and in need of study and explanation, but the same can be said for religion. Important to the concept of "given," is the idea that the Lifeworld is a form of truth, even if an individual does not understand all aspects of their Lifeworld. Though it has become a cliché, it is still useful to think of a concept like gravity as a truth that many do not fully understand, but still believe in, as a part of everyone's Lifeworld that is *given*. In the concept of Lifeworld there is an interaction between the world as given and the subject itself, the person who is both explaining and being acted on by his or her Lifeworld, taking on meaning in his or her articulated view.

Therefore, the idea that subjects are able to articulate a view, is important to the concept of a "given" Lifeworld, though he or she does not arrive at the final state of "knowing" the truth. The truth can be known through science, but it can also be known through religion. Science and religion are instruments to be used to understand one's Lifeworld, a concept that has no meaning without the presence of human beings. As derived from Husserl and Cassirer, it is my view that almost all rational people use both

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[47] James Dodd, *Crisis and Reflection: An Essay on Husserl's Crisis of the European Sciences* (New York: Kluwer Academic Publishers, 2005), http://magik.gmu.edu/cgi-bin/Pwebrecon.cgi?BBID=1313898 (accessed November 15, 2007).

science and religion to examine their Lifeworlds, even if neither their vocation nor their avocation includes either of the disciplines of science or religion.

Habermas uses the concept of Lifeworld as the starting point for this Theory of Communicative Action recognizing that Lifeworlds are partially unique to each individual. Both the "given" and "understood" parts of a Lifeworld will be brought with a person when they interact with their world of people and things. By incorporating and understanding the Habermas model, we can formulate a theory of communication in a state of conflict that informs the conflict over hESC research.

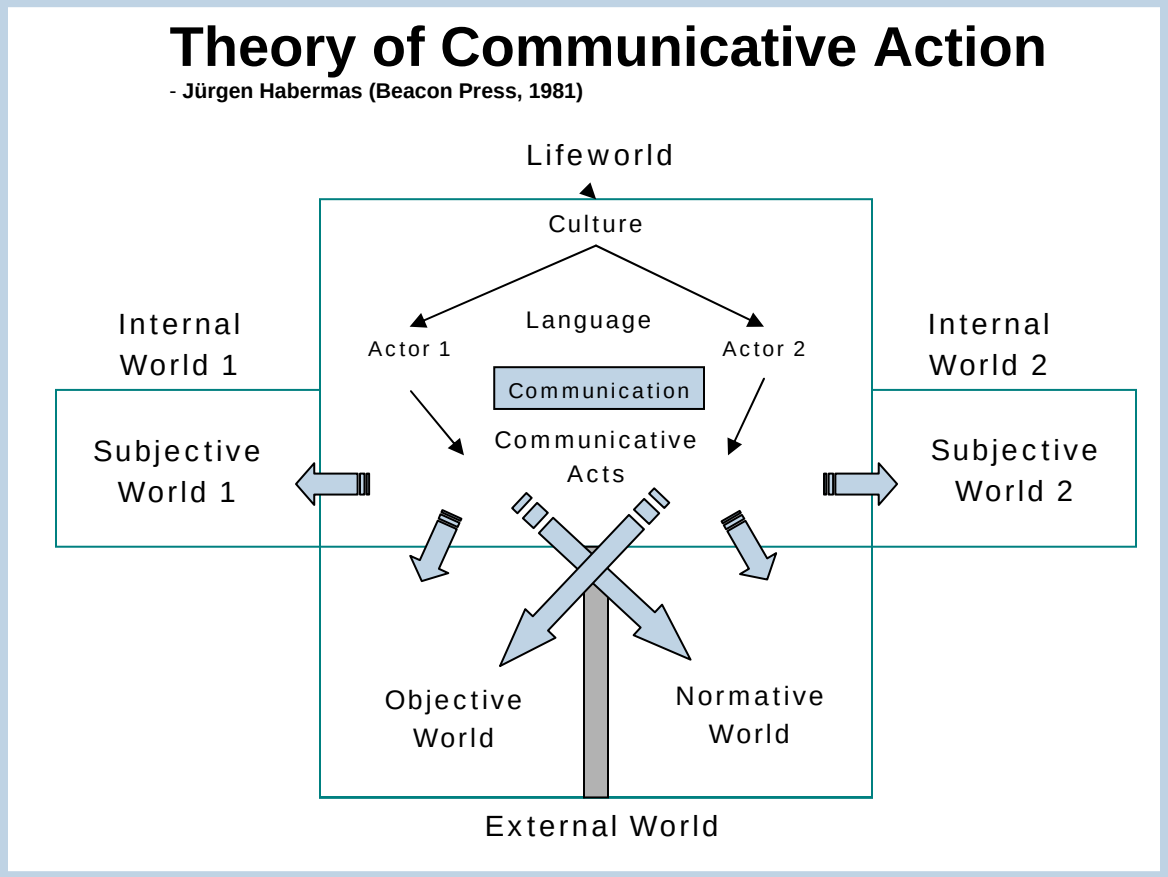

Figure 4.2 The Theory of Communicative Action

Description of the Model[48]

The Habermas idea of communicative action is that parties will first communicate in the context of a common culture and a common language, and then they will act in coordination with each other.[49] I attempt to align my approach to the hESC research

[48] Jürgen Habermas, *The Theory of Communicative Action* (Boston: Beacon Press, 1984), 127.
[49] Habermas, *The Theory of Communicative*, 119.

conflict with this concept. This concept fits well with the models already included in my approach. Snow's idea that parties can solve problems through developing more literacy in the other's specialty may be a necessary precondition for the Habermas model, but it is not enough just to be able to speak the other's language. Though not specifically addressed in the Communicative Action Model (CAM), the motivations of the parties become important factors. That is where the Dual Concern Model (DCM) becomes a valuable tool; to solve problems, there should be a strong element of concern about the needs of all parties that are incorporated in the outcome. Though the DCM implies that the end of each problem-solving solution there will be some action, Habermas focuses more on the complicated interactions that result even in coordinated actions. The acts influence and change multiple worlds, and those changes become elements of any future problem solving efforts. If coordinated actions are not executed according to plan, there will be little hope of any future coordinated actions among those parties, a concept that is also part of the larger treatment of the DCM.

In the Habermas theory, communication provides the interface between the internal Lifeworld and the external world. Though the parties in conflict cannot share their Lifeworlds, they do occupy the same cultural sphere and as I will show in my research, they can share a common language, as the parities become more literate in each other's areas of concern. As people begin to act in communication with each other in a problem-solving mode, their actions can influence the other worlds in the Habermas scheme shown above. Actions can feed into their respective subjective worlds or internal worlds with little direct immediate influence on the external world. I observed this

phenomenon in most of the interviews conducted for my research. My objective was to listen and capture solution ideas from the interviews, but naturally my questions prompted the experts to reexamine their own positions, as is probably always the case in any good two-way conversation.

Often people I interviewed started by presenting their position in the same way that some of them have probably done dozens of times in response to media interviews. After their initial presentation, they are probably used to interviewers asking clarifying questions about the stated position or challenging the position, prompting them to counter with additional details or arguments. In my case, I asked the experts for their solutions, and they had to think in different ways, usually expressing some consideration for the other side. As they were challenged, it did not change their views outwardly, and of course that was not my intent. But in the act of communication, there was feedback into their internal world and therefore an expansion of their own Lifeworld, a benefit that they will be able to draw on in the future. In the Habermas theory, people speak out of their subjective worlds. As their subjective worlds become altered by their contact with others in the region of common culture and language, the language and logic they use in presenting their case can become more focused on ideas that resonate with others.

Communicative acts can also feed into the objective world, a component of actor's external world that is shared by the other actors. During my interviews, I was able to observe this process in action, as it appeared that the interviews became a part of the each expert's communicative action. As the interviewer, I had already placed myself along with the experts in the realm of common culture and common language, and we

contributed together to the external objective world. This action is a function of learning, and that was a clear benefit to me and the main part of my objective in conducting the interviews. But I suspect that the experts also learned, because learning can come from contemplating and answering questions. Though my objective was not to teach the experts, they could not help but learn as generally happens in the act of human interactions; perhaps our encounter and the growth of our respective objective worlds will change our communicative acts and improve the quality of this and future conflict solutions.

Finally, communicative acts affect the normative world by helping to reframe the way society views the conflict. Though I could not observe changes in norms relative to this conflict during my short contact with the individuals, many people did explain how this has already happened in their own experiences. Several of the experts related processes that involved establishing a common language, facing this and similar conflicts objectively, and experiencing problem-solving dialogue that resulted in modifying group norms. Though this may have only directly affected the normative worlds of the few participants in the dialogue, the normative world does connect the individuals and groups to the external world, causing incremental shifts in the norms of society as a whole.

Characteristics of the Model

Habermas points out that this model is designed to show the separations in the various worlds that people occupy and the interactions among those worlds. But in reality people act in all of these worlds simultaneously and it is not easy to separate out

where and when communicative acts alter these various worlds. These elements as they are depicted are intended to be thematic, illustrating the types of changes that can result from actions and the fact that the actions ultimately affect Lifeworlds and external worlds. Behind this simple and generalized model showing how information and interactions flow, actions take place and Lifeworlds change. I tried to drill down into those details as to explore the recommendations of the experts, all related to communicative action.

An important element of communicative action is interpretation. As people speak and act, they are making validity claims that come out of their Lifeworlds but the claims must be placed in the context of the common culture and learned language to have any significant credibility. Those claims will be analyzed and interpreted by the other participants again in the context of elements they have in common with the speaker, but also in the context of their own Lifeworlds. In this model, all of these worlds are dynamic and all communicative acts are situational.

Application of the Model

Drawing from the Habermas theory of weltanschauung or Lifeworlds, it is possible to get a sense of hopelessness. Lifeworlds cause a separation that not only prevents people from wanting to resolve a conflict issue, but also makes it impossible to do so. Taken in the abstract, there may be no overlap between significantly different Lifeworlds, and if there is truly nothing in common between the positions, those

occupying their own particular realm may be incapable of even communicating with the other. There are a number of factors that can become obstacles to communication.

For many of the parameters that define the religion and science Lifeworlds there is an imbalance. For example, the most obvious barrier to communication is language, both in vocabulary and context. In the hESC conflict a unique vocabulary is a strong factor on the scientific side. Because scientists have developed a complete set of technical terms that are necessary to describe the process, many terms may not be part of the common language of our society. There is a significant potential for a communication gap. A further complication emerges when certain scientific terms have become part of the general vocabulary but may hold different meanings to the different Lifeworlds depending on the context. For example, one of the most prominent terms in the conflict, embryo, can mean different things to different people. In the purely scientific sense the zygote is an early form of the embryo, and does not need to be implanted in the womb to be called an embryo. To the general public, it would be easy to confuse the term embryo with the fetus, so for many people hESC research invokes the idea of removing the embryo from a womb. So even what scientists see as a basic and objective name may confuse and add to the conflict when placed in a different context.

Of course in the religious Lifeworld there is another set of terms that may be misunderstood or lack meaning to a scientist. There is a difference though; the average American scientist is likely to have been exposed to the religious language, which is part of the vocabulary of an average educated person, while the religious may or may not have a good grasp of the specialized language of the cell biologist, perhaps a validation of the

Two Cultures Model. As stated before, scientists represent a cross section of society; there should be about the same proportion of the entire spectrum of religious views among scientists as in the rest of society, and of course among the religious there will be a proportional representation of each of the scientific fields as well. Most likely, few in this country have been driven away from biology by their religious beliefs and in those few cases where it may have happened, both institutions will have lost something important at their core, a piece of an institutional conscience that would recognize the need to bridge the gap between science and religion.

Language and definitions derive from experience as well as from education. For those educated in the sciences, experience in research is an important part of their Lifeworld. For a cell biologist who is creating and studying stem cells in the laboratory, it may be difficult to understand how anybody could view the zygote as a human being with rights and worthy of legal protection. Someone who has not worked in the field may find it difficult to view stem cells as research materials, instead categorizing the embryo as a very early stage of a living human being that could become someone's child if implanted in a womb. When pushing back earlier in the development of human beings, both approaches become reductionist; neither is considering the whole.

Values also help to define the two Lifeworlds, but again observers should not make the mistake of considering one Lifeworld to be value based and the other to be deficient in values. This does raise another imbalance issue; society easily recognizes the role of values in religion even if there may not be wide agreement on the quality of individual specific values, but those outside of the sciences may not recognize that

science is also value based. The two Lifeworlds actually share many values such as truth, freedom, loyalty, and continuity.

In the Lifeworld, the elements of associates and institutions help create the context for language and practices. As younger people mature and their Lifeworlds expand; teachers, parents, other leaders, and the institutions they represent help to preserve the language and create a value system that guides and comforts. As identity develops, and individuals starts to examine their Lifeworlds critically, trying to push out of their comfortable positions, the people and institutions that the individual chooses to associate with may help to refine, revise, or reject a partially inherited Lifeworld. This could lead to both vocation and avocation that may actually constrict the Lifeworld of those specializing in a career or focusing on their life's vision. In my view, most people begin to recognize a need to leave a legacy causing a new stage to emerge, perhaps an opportunity to expand their Lifeworld again.

I believe people can change their Lifeworlds to accommodate the other view, but people are also capable of retrenching, seeing a need to hold the line as a matter of principle. Selected institutions and associates may be factors in this new Lifeworld as some return to orthodoxy, or people may create their own institutions and associates as they find their current and past Lifeworlds to be inadequate, and as they create their own brand of orthodoxy. In their own Lifeworld, people embrace or reject loyalties but loyalties to someone or something outside of themselves are important values throughout.

Values also help to define the Lifeworlds, but again observers should not make the mistake of considering one Lifeworld to be value based and the other to be deficient

in values. As Adrienne Kaufman found in bringing pro-life and pro-choice advocates together, both were surprised to learn that the other view was indeed value based.[50] But this does raise another imbalance issue; in our society where religion cannot be escaped according to Eliade[51], it is easier to recognize the role of values in religion even if there may not be wide agreement on the quality of some of the individual specific values. But in our society where some think of science as the realm of either Dr. Frankenstein or Dr. Einstein, people may fear scientists as those who create monsters that turn back on the creator with intent to destroy, a monster made of human parts, or a weapon made of nuclear parts. The two Lifeworlds share the core values of truth, freedom, equality, loyalty, and continuity. Each has developed specific codes of conduct as a guide for living and as a metric to identify when someone has strayed from these values.

For Habermas, Lifeworld necessarily leads to action. As a person adheres to and practices the unique methods of his or her inherited and chosen Lifeworld, actions are actually partly controlled by their Lifeworld. Neither the Lifeworld nor the resulting action is predetermined, but rather both are integrated into the person's identity. To live an integrated and transparent life, people must act within their Lifeworld or modify their Lifeworld to fit their actions. This link becomes an important tool in analyzing conflict and in developing solutions. This became clear in the analysis of the solutions that were suggested by the experts that I interviewed. It would be both presumptuous and futile to try to document and analyze these particular Lifeworlds, and it would be foolhardy and

[50]Adrian Kaufmann, "The Pro-Choice/Pro-Life Conflict: An Exploratory Study to Understand the Nature of the Conflict and to Develop Constructive Conflict Intervention Designs" (Ph.D. diss., George Mason University, 1999).
[51] Mircea Eliade, *The Sacred and the Profane; the Nature of Religion* (New York: Harcourt, 1959), 201.

maybe even risky to impute motives to those I interviewed. As I interviewed, I avoided these kinds of generalizations and prejudices, but usually people opened up windows into their Lifeworlds as it became clear that my objective was to understand and document their ideas and not to criticize or try to influence them.

Because of the systematic approach I used along with the necessary human subjects research formalities invoked, I believe that each person that I interviewed communicated with integrity, expressing views and relating experiences that were well aligned with their Lifeworlds. Although not a criterion for my research, each person interviewed held a doctorate or a professional degree, and they were all in the stage of having a well defined Lifeworld that they understood, believed in, and acted on. For Habermas, actions both emerge from a Lifeworld and submerge into it to become elements that define the Lifeworld. This link will also become a factor in crafting solutions to the conflict.

After spending some time in the United States studying the ethical issues surrounding the embryo in the context of American society, Habermas concluded that, as in Germany, there had not been nearly enough dialog over the issues in this country. This idea was supported by several of the experts I interviewed, including Johnston, who considers the conflict to be at a stage of healthy debate as is the traditional American way of dealing with conflict. To others, it is time to cut off debate and vote; let the majority rule. Cutting off the dialog is both impossible and unwise. In my view, this approach will not make the conflict go away, because the minority, those who oppose hESC, is

entirely too large--at least 25% and approaching 40% in some surveys depending on how the questions are asked[52].

For Habermas, we must focus on the boundaries of what he characterizes as a science and faith conflict. "Determining these disputed boundaries should therefore be seen as a cooperative task which requires both sides to take on the perspective of the other one."[53] So the lack of debate has prevented us from determining where the boundaries between the Lifeworlds can be drawn and even the very nature of the boundaries. Unless both sides work together to determine the boundaries, they will continue to be arbitrarily drawn and different borders claimed by each side of the conflict. In setting boundaries, many have drawn from their position in the abortion conflict and extrapolating back, conclude that if abortion is wrong then destruction of an embryo in the laboratory for research is equally wrong. The Catholic position on the issue uses the same boundary but sets up a higher barrier, considering the creation of the embryo outside of the womb to be wrong in the first place.

On the other side of the conflict, the common point is that hundreds of thousands of embryos, already created, are doomed to destruction, a total waste of materials that could be donated to science, is a form of arbitrary boundary setting itself. Some of those using this logic would set the boundary at the fertility clinic door, saying that embryos should cross only for the useful purpose of IVF or hESC creation. Another boundary

[52] Pew has conducted several surveys that link religious beliefs with social issues such as the ESC research conflict. Summaries and in some cases even raw data is available at The Pew Forum on Religion & Public Life, "Bioethics," The Pew Research Center. The Pew Research Center. http://pewforum.org/bioethics/ (accessed November 14, 2007).
[53] Jürgen Habermas, *The Future of Human Nature* (Cambridge: Polity, 2003), 101.

formalized by President Clinton and widely accepted publicly is that human cloning should be prohibited. Yet the somatic cell nuclear transfer (SCNT) technique is cloning and may actually end up being among the successful hESC therapies to eventually come out of the research, because it may negate or minimize human transplant rejection problems by allowing genetically identical stem cell transplants for use in regenerative medicine.

The trouble with these types of boundary determining initiatives is that they do not take into account the view of the other while inviting participation of the other. These types of boundaries range from outright defiance of the other, to good faith efforts to accommodate the other, while assuming one understands the other Lifeworld, without actually communicating in a meaningful way with the other. These boundaries can be developed to be consistent with the logic and values of the creator's Lifeworld, and yet may not be consistent with the other's Lifeworld. In my view, another problem with these kinds of boundaries is that they keep getting reinforced and built higher, making them more threatening, less penetrable and in a sense, sound proof and opaque. Eventually, neither side can see across the boundary into the other Lifeworld.

Habermas does not object to boundaries, but he suggests that each party consider the perspective of the other side, as the parties determine the boundaries together. Otherwise the boundaries themselves can become the focus of the conflict rather than the major and legitimate concerns of the parties. An example of this is the unrealistic effort to institute an adoption program for the spare embryos in fertility clinics, a good idea for those who could benefit from it in allowing more reproductive choices, but a bad idea

when the practice becomes a symbol for how to resolve the problem; how could society realistically adopt the hundreds of thousands of remaining unused embryos? Although this type of adoption program is a good thing for those couples who are unable to have children of their own, some of the people I interviewed viewed the attempt to raise the awareness of this program in the public consciousness as an attempt to undermine hESC research objectives. In my view, this public campaign is an attempt to unilaterally define the boundaries of acceptable hESC research. My perception is that most Americans would not oppose using embryos stored in IVF clinics as hESC research materials, making their ethical boundary *the doors of the IVF clinic*, but this adoption awareness program is in my view, an attempt to erase that boundary without adequate dialogue among the stakeholders. Whether deliberate or not, this technique is similar to creating settlements in disputed territories, an attempt to weaken the other's boundary while legitimizing a claim to territory, in this case the boundary of the fertility clinic door and the territory of the embryos in frozen animation.

On the other side, attempting to equate the hESC research conflict with the abortion conflict is a means of reinforcing a boundary constructed out of material familiar to the builder. In reality, the hESC research conflict can be treated as a separate issue from abortion, a way of relocating the boundary of the conflict in a place that allows a more constructive approach to conflict resolution. It is difficult to determine the extent of this problem of equating hESC research to abortion. Based on my research, I believe it is widespread, and if that false analogy could be changed it could lead to a solution to the conflict.

Among the general public, there is the problem with misunderstanding not only the terms but also the facts, and that could be remedied with education. One thing that seems to add to the confusion is the early and failed attempt to cure Parkinson's disease using fetal tissue that of course could only be obtained by spontaneous or induced abortion. This sort of practice raises serious ethical issues: abortion in this country is about the right to privacy, and injecting the idea of donating the fetus for research or therapy changes the motivations accompanying the act. Could women be coerced into having an abortion for a "greater good" or even to conceive with the deliberate objective of growing genetically tailored biomaterial to save a loved one or themselves?[54] Fortunately, in the hESC research conflict, the actions take place outside of the womb, making all the difference for many. This could potentially lead to a good solution for those that may not be aware of the difference between fetal and embryonic research.

None of the people I interviewed fits into this category; all were well informed or they wouldn't have been on my list of perspective contacts. Yet some of them did use the abortion issue as a guide to their own position on the hESC research issue or at least their construction of their perception of the Lifeworld of the other. On one side, advocates of unfettered hESC research characterized the pro-choice position as an issue of freedom rather than a right to privacy and then applied that principal to the hESC research issue. There certainly is an aspect of freedom in society's view of abortion, because lack of

[54] Two provocative fictional accounts demonstrate the idea of deliberately breading primarily for the sake of a living person in need of genetically compatible biological materials: the novel by Jodi Picoult, *My Sister's Keeper* (New York: Atria, 2004) and the science fiction movie by Caspian Tredwell-Owen, Alex Kurtzman, II, Roberto Orci, *The Island*, directed by Michael Bay. 136 min. DreamWorks SKG, 2005, DVD.

privacy would be among the most basic deterrents to abortion, but that has little relevancy in this case, unless we were to focus on the other end, a person benefiting from the research. A future person receiving the therapy has a right to privacy that may influence freedom, but the right to privacy of an egg donor does not equate to freedom.

This Lifeworld discussion is in danger of generalization and oversimplification. When discussing the roles of faith and science in American society, Habermas warns of the problem of split identities, maintaining a public one and a private one. How can a person act in ways that are consistent with their Lifeworld when that Lifeworld cannot be revealed in public? For the purpose of this discussion we could envision a third hypothetical Lifeworld, not the focused hESC research scientist or the committed non-science religious lay person described above. Imagine a person who is well educated in both the humanities and science. In this case we could envision instead a Lifeworld derived out of an environment that emphasized solid religious training and practice and placed a high priority on formal education. Having come through the public school system successfully, this person completed all the formal higher education necessary to become a physical scientist. Moving on into a vocation, this person is devoted to both research and teaching, while remaining a person of strong faith. As this unique Lifeworld developed, this scientist gained a strong set of values that help to guide living, working, and reproducing the next generation.

With this kind of Lifeworld, there may be a problem in living out an integrated life, one where actions are aligned with a single Lifeworld, causing the kind of split identity that Habermas warns about. Some would consider themselves to have a

successful life if they could keep their public and private Lifeworlds separate, living in the professional one 5 days a week and living in the private on 2 days a week. But Habermas and Ian Barber would probably say that these two Lifeworlds need to be integrated so that the person can live an integrated life all the time. This can be done, as demonstrated by the two Catholic priests I interviewed. Both are first class biological scientists who support the science of stem cell research as well as the Church's position on the need to preserve the embryo even if outside of the womb. The way they handle it is to support adult stem cell research and what they call a third way, creating pluripotent stem cells through some method that does not cause the destruction of a human embryo. This is one way to live an integrated life in the context of this conflict and a legitimate approach, but clearly near the edge of the solution set available to us in resolving this conflict.

Another approach I encountered in the interviews was proposed and acted on by the Protestant and Jewish clerics as well as several practicing lay people. In their approach, they have inherited or adjusted a religion-based Lifeworld to accommodate their profession or at least keen interest in the biological sciences. Some of these people emphasized, as Habermas does, that the strength and methodology of science in democratic societies were derived from the freedom and practice of religion. For these people their Lifeworld envelops the science and religion in such a way that they do not need to split their public and private identities. For these people, there is great respect for human life and recognition of the legitimate concerns of those who oppose hESC research on religious and ethical grounds. But in their solution, they emphasize the

religious calling of healing the sick, adding to the many and varied factors that would encourage hESC research as part of the ordained destiny of humanity.

These kinds of integrated approaches can become the key to a solution. Deep and respectful consideration of both sides in the conflict will lead to integrated solutions. Habermas believes in autonomy and free will while being careful to salvage religious truths. There is a difference between acts that are morally wrong and those that are profoundly evil, and religion can help society measure the difference. Those that are profoundly evil need to be purged from society, but those that may be morally wrong should be up for debate. The profoundly evil should not be part of any Lifeworld, but the morally wrong depends on the Lifeworld used to judge them. Somewhere in the hESC research conflict, I believe there is much to be judged, and the legitimate Lifeworlds of the actors need to be brought out into view, not held in privacy.

This conflict strongly suggests the need for action of some kind. Because actual biological material is at the center of the controversy, both sides expect some action to take place, either entering into research and therapeutic applications or protection against exploiting existing material or creating new material for research purposes. Represented in the work of Habermas, theories of communicative action will provide a deeper theoretical basis for understanding and resolving the problem. In this polarizing social issue, the two sides tend to discount the un-provable ideas of the opposing side. Those focused on the science may consider a belief in the soul as immeasurable and unnatural for modern society. But that idea may be the very basis of many religious views.

Habermas' Lifeworld is where communicative action takes place. Without shared cultural factors and a shared language there can be no communication among parties and no communicative acts can transpire. The subjective worlds are inaccessible to anyone other than the individual actor who is registering information internally with the help of communication among those occupying the same Lifeworld. Together, those in the shared Lifeworld of culture and language are creating acts that move into the external world sectors, the objective world and the social world. Though there is some overlap in these realms, the objective world is the repository for new and existing knowledge and the social world for norms and relationships.

Relating to the Snow theory, if there are two different cultures with two different languages, there can be no communicative action. Ironically, with the issue of stem cell research, those in different cultures do not necessarily realize the gap exists in the communicative sense. They may attribute differences to disparate beliefs and may not fully recognize their language differences as contributing to disagreement. This naturally leads to considering the self to be enlightened and the other to be ignorant. Even worse, there may be those who do not fully appreciate the combination of cultural and language differences, so they believe their acts are value based, while the other is deficient in values. By its very nature a person's, subjective world is of their own creation and becomes their private realm, so neither can access the other's subjective world but they are unaware of its nature as well as this access problem.

The Lifeworld concept provides a good analysis tool to determine where those in disagreement are hopelessly trapped in their own subjective worlds. Of course there will

still be conflict within Lifeworlds but at least those in disagreement will have a starting point. They will act not only in their own subjective world but in the shared objective and social worlds. There will be some progress or at least an externally based aspect to their disagreements.

The Shared Vision Model

There is a problem with the metaphor of a bridge when viewed as a tool to cross a deep chasm with two opposing parties on either side. A better metaphor for this particular conflict is a mountain to be crossed. A group of people are standing side by side looking at a mountain ridge trying to figure out how to get to the other side. Everybody is in agreement that they want to cross the ridge, but there is little agreement over how to do it: what route to take, what tools to use, how to challenge the many obstacles. At this point there does not seem to even be a leader who can give these pioneers confidence that the task can be accomplished. But the important thing is that the opposing parties actually have more in common than in conflict, standing shoulder-to-shoulder trying to get a glimpse of the other side.

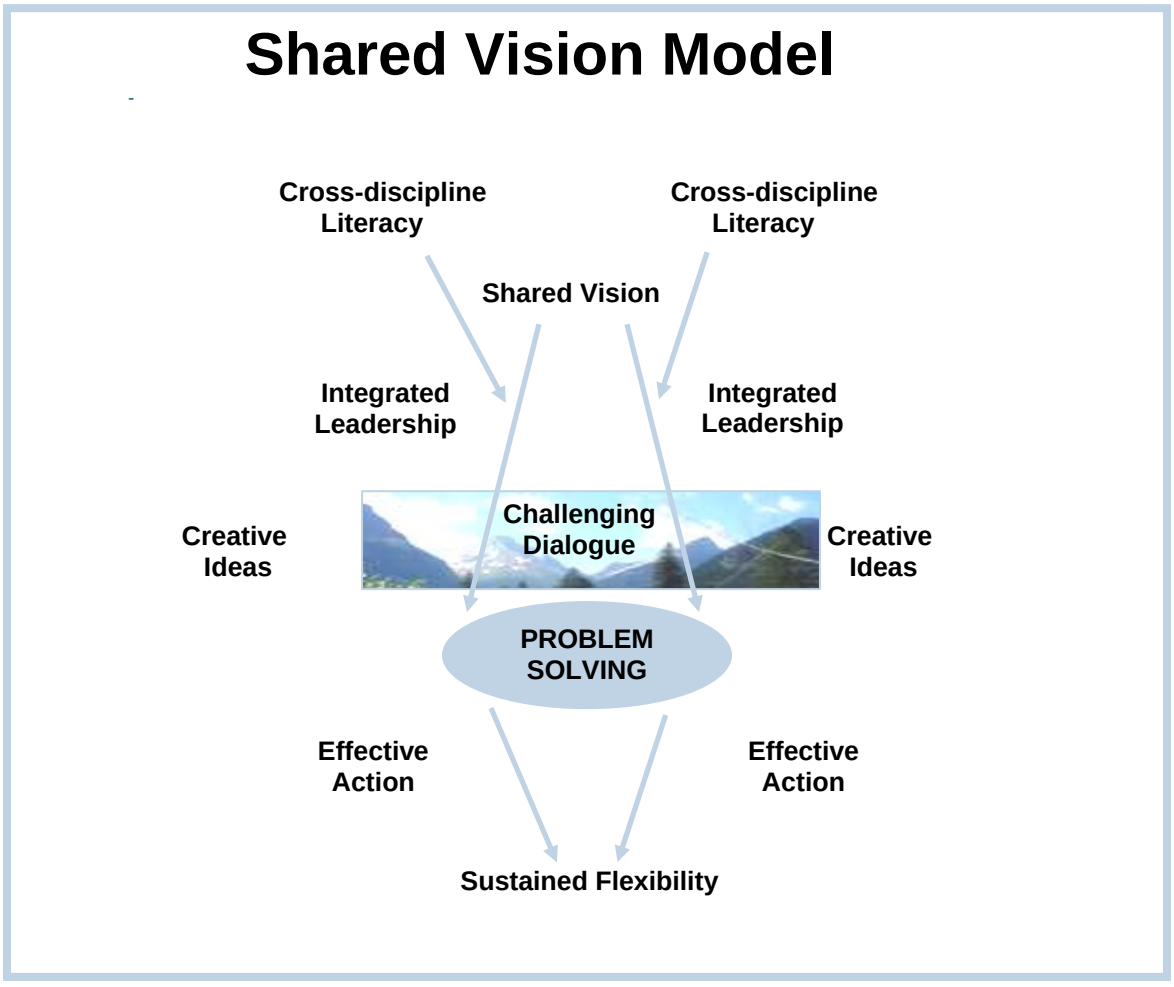

Figure 4.3 Shared Vision Model

This new model does not negate the previous ideas presented in this chapter but instead builds on those well-established theories. Of the previously described works, the dual concern model has been thoroughly researched with over 80 experiments already conducted to validate the concepts providing a solid framework for my work and becoming central to my conclusions. But I propose to take those ideas and push them a little farther to find a model that will work better for resolving the hESC research conflict. I derived this model from data to be discussed later, but at this point without

conducting experiments, I can only test the new model in a theoretical sense. The new model therefore must be designed in a way that it could be testable an abstract way, a task that I intend to accomplish by showing how the ideas relate to my analysis and my results.

At the top of my Shared Vision Model (SVM), I start where the Two Cultures Model left off and expresses the need for cross-discipline literacy as recommended by Snow as a precondition in order to start the process of resolving this conflict. At the core of the SVM is the Dual Concern Model (DCM), and just as with the DCM the SCM also focuses on the need for each side to have a high concern about their own outcome as well as the outcome of the other, leading to problem solving solutions. The end of the SCM is to move beyond problem solving and into the future through action that reaches out to the greater society to test and sustain the problem solving solutions.

Elements of the Model

Cross-discipline Literacy. Although cross-discipline literacy will not magically resolve the conflict on its own, I believe each side must understand the language of the other in order to embark on the problem solving solution track. Those focusing on religious concerns need to understand the science enough to discuss the issue intelligently and those focusing on the science need to understand the rationale used by some for objecting to conducting the research. In my interviews, I found that most of the people that object to hESC research are quite literate in the science, certainly knowledgeable enough to understand the needs and concerns of the other side. Scientists may also be

religious and therefore literate in the religious language, may be more secular but nevertheless solidly ethical, or not very interested in religious matters while focusing more on the science. But generally, I believe they are literate enough to understand the opposing arguments, because the religious appear to have deliberately removed the religious language from their arguments. Of the experts I talked to, none argued the issue on theological grounds, purposely avoiding the spiritual context, such as concerns for the human soul. I argue that this may not be the optimal approach; why not express religious concerns in the context of ensoulment if the concept is really where the concern is focused? Why should the arguments be dumbed down to accommodate those who are compartmentally illiterate?

Shared Vision. If those in conflict are actually standing shoulder-to-shoulder surveying the obstacles looming before them, they should be able to come up with a shared vision. There are some visionary elements that all sides could agree with such as a vision of effectively applied therapies focused on regenerative medicine. But there are other important visionary elements that would not be immediately agreed on by the parties such as a need to understand the science of human development. Not that there is disagreement—in my view, it is simply a case of the scientists holding more interest in the science, while the non-scientists emphasize the applications. Part of the vision crafting process must include understanding needs all around. Those focused on regenerative medicine may not share the needs of basic science to study human development, but that would not be fair. The vision needs to include the full team of scientists, ethicists, and theologians.

Integrated Leadership. Grand scientific projects can no longer be simply pushed unilaterally by the knowledgeable scientists. True, the talent and resources need to be available, but the leadership will probably make the biggest difference. There are several examples of these kinds of modern day projects, where success depended on shared leadership among the scientists, engineers, stakeholders, and politicians: the commercialization of aviation, the Manhattan Project, the victory in World War II, the interstate highway system, the eradication of small pox, the Apollo Project, the inter-planetary space probes, the Hubble Space Telescope, the Mission to Planet Earth, and the Human Genome Project. It may be revealing that none of these involve religious leadership to any great degree. Those projects that I have found to be of interest to many religious leaders have not yet enjoyed great success, for example: elimination of worldwide hunger, eradication of HIV-AIDS, an alternative solution to widespread abortion, integrating science and religion in education, instituting prison reform, ensuring justice in the courts, workable alternatives to war, reducing global climate change, normalizing end-of-life issues, eliminating the trafficking of human beings, promoting immigration reform, and of course finding hESC research solutions. To address this problem, we need good leadership integrating science and religion either through a shared leadership approach or through multi-literate people to help guide us through the obstacles.

As was the case with the human genome project, leadership for a more deliberate national hESC research project could be administered by the National Institutes of Health (NIH). My vision of this project would include a Presidential committee made up of

physical scientists, ethicists, social scientists, and clerics which would advise the Administration though the NIH on hESC research issues.[55] The charter of this organization would include the role of guiding the nation to accomplish the research within deliberately established constraints, rather than focusing on putting on unnecessarily constraining progress.

Challenging Dialogue. The hESC research project should be approached as a new challenge unlike any other, but we can also relate the conflict to several of the other projects listed above as those areas of special interest to many of the religious faithful. These conflicts contain common elements such as: global concerns that cross national borders, a need for the United States to take the lead but not to operate in isolation, focus on the needs of the poor that will also benefit the wealthy, controversial issues with mixed political support, and nearly insurmountable challenges. The hESC research conflict must be placed in the context of justice if there is to be any hope of getting religious leadership to join with the scientists. If the result of hESC research is to develop medical applications only available to the wealthy, the science will have a tough time gaining popular acceptance. The concept of justice and ministering to the needy resonates with nearly every religious person at some level. I believe, Justice has been a guiding principle in Judaism for several thousand years, has been a major focus of the

[55] President William J. Clinton's National Bioethics Advisory Commission and President George W. Bush's President's Council on Bioethics attempted to bring multi-disciplinary experts together to advise the administration on stem cell research as well as other bioethical issues. The National Bioethics Advisory Commission, "The National Bioethics Advisory Commission General Information," National Reference Center for Bioethics Literature at Georgetown University, http://bioethics.georgetown.edu/nbac/ (accessed November 14, 2007) and The President's Council on Bioethics, "Stem Cells: Recent Developments in Science and Policy," The President's Council on Bioethics, http://www.bioethics.gov/ (accessed November 14, 2007).

Catholic Church, especially since Vatican II, is a necessary element of the reformation Protestantism, and has been a major emphasis over the last century of the Evangelical movement.[56] Religious leaders can have a great impact on social justice issues because of their ability to mobilize large numbers of Jews and Christians of all races. If the hESC research conflict can be reframed as a new social justice challenge, there will be greater support among people of nearly all religions. Many of challenges already exist in this conflict, but it is useful to add to the challenges. Rather than looking for the easy way out of the conflict, the nation should follow the Habermas idea of increasing the dialogue and taking on more of the related issues.

Though I recommend against addressing highly polarizing issues such as abortion in the hESC research context, there are related issues that need to be included in discussions. Examples of such issues include: the rights of the donors of human biological materials, ensuring that hESC research products are equally available to the poor, concerns about producing clones and chimeras, and the fear of descending into human experimentation.

Creative Ideas. As the old and new challenges become more focused it will be necessary to increase the dialogue among the stakeholders as suggested by Habermas, but at the same time there needs to be additional exploration of the options. The parties should not object to exploration of unilateral ideas as long as the purpose is to explore the options, but not to push the options as solutions that someone believes must be accepted

[56] Margaret. A. Farley, *Compassionate Respect: a Feminist Approach to Medical Ethics and Other Questions* (New York: Paulist Press, 2002), 45.

by the opposition without first discussing the needs and concerns of all sides. New ideas should come out of dialogue, though it would not be necessary for full agreement among the parties before their ideas can be fully developed and tested. More ideas would be beneficial though they should not all be implemented. Idea crafting is not expensive but implementation is.

Effective Action. As in most conflicts, solutions will be realized as the parties began to act. Although as stated above, there is a need for greater dialogue to work out good solutions, there is also an urgency of need in nearly all social issues and especially the hESC research issue. Because people are suffering and dying, it would be unconscionable to await a perfect solution before proceeding. There are numerous research initiatives that can be pursued either with no controversy or with a minimum of objection. It is okay to work on technical solutions that may eventually deflate the conflict, but the nation should also pursue available research initiatives even if they do not enjoy full support of all parties. This can only be done, however, if there is a sincere full scale effort underway to resolve the conflict through dialogue. This does not mean the nation can pursue a line of unfettered research. In my view, there are some ideas, such as reproductive cloning and experimentation on living fetuses, that we cannot tolerate, but the idea of expanding the number of hESC lines is a goal that will not lead us to destroy the moral fiber of society. Whatever actions we pursue must be done in a context of maximum respect for humanity and minority religious views.

Sustained Flexibility. Because of the need for concurrent action, there must also be sustained flexibility. If we find that a particular line of research is no longer fruitful or

encounters significant ethical concerns for society, we must be willing to abandon that approach. If new technical solutions make it no longer necessary to create new hESC lines, we should choose the better, cheaper, and less objectionable solution. We must avoid any slippery slope situations that irreversibly lead us down a path to a condition that a moral society would find objectionable. The vast majority of the research processes that scientists could pursue are reversible; in my view, few are so horrible that society would later deeply regret, or that will prompt a need to apologize to a future sector of society. We have the ability as well to recognize those particularly abhorrent ideas in advance. A good solution to the hESC research conflict needs to maintain significant flexibility, allowing us to back off or redirect research efforts. At the same time we need to maintain a sustained effort; once we cure one debilitating disease we will want to move on to another. It would not be right to limit the effort only to the most economic cures or the highest profile diseases and disabilities. At this point it would be hard to imagine where regenerative medicine might lead us, but there should be little to fear, and we should remain confident that society can deal with any complications presented by the likely result of longer and more satisfying lives.

Application of the Model

Using the theories and models described above, I developed pre-positioned assessment criteria discussed in detail in Chapter VI: Efficacy, Inclusiveness, Expansiveness, Rationality, Endurance, Continuity, and Hopefulness. Although all of the theories and models contributed to the development of the new model and the seven

assessment criteria, it is important to establish direct linkage from the assessment criteria back to the SVM. Remember SVM is associated with the metaphor of the parties standing shoulder-to-shoulder gazing off into the distance, while working together; trying to find the best way over, around, or under the major obstacles standing in the way. Rather than a chasm to bridge, there is a ridge blocking the way to a better future and there are many ways to get to the other side. Addressing the assessment criteria in the context of the SVM, I discuss them in order of their importance as elements of achieving problem solving solutions and I link each of the elements to the new model.

Efficacy. Efficacy can be related to the model element *Concurrent Action.* The idea of efficacy is not simply a matter of predicting that the solution will solve the problem, but also a matter of determining if the solution is a problem-solving solution as in the Dual Concern Model. The parties could solve the problem politically by having a national referendum, acting on the wishes of the majority and dispensing with any discussion. This would not be a very satisfying solution even to the winners, and therefore not really an effective solution. It would certainly not end the conflict. A possible criticism of this assessment criterion might be: how do you know a solution is effective before it has been implemented? But we can assess efficacy long before we fully implement a solution by laying out an action plan and assessing public reaction to early action steps. Though beyond the scope of this project, we could design a number of simulations and focus group activities to help predict results, and we could use a series of surveys to validate efficacy as we incrementally implement solutions. That is why

efficacy needs to be linked to *Concurrent Action* in the model. Those implementing solutions should create action steps that have a high probability of success.

Inclusiveness. How can we ensure inclusiveness as we move forward with solutions? One way is to fully implement the model element *Integrated Leadership.* If leaders emerge that integrate the ideas of both sides, we can push through the obstacles to get to problem solving solutions. Most of the people I interviewed for this project were leaders in some capacity and naturally they were focusing their leadership on one particular objective, either to do hESC research or not to do hESC research using the procedures that are possible today. Very few were able to place their parochial views in the context of the conflict as a whole. There were a few notable exceptions that I will discuss later, those who approached the issue with exceptionally open minds or those who were able to work in meaningful ways with those holding opposing views.

Expansiveness. Crafting *Creative Ideas* will contribute to expansiveness by encouraging the parties to explore new approaches to the conflict. Some of these ideas will address the needs of all sides and become part of the solution. Others ideas may not become elements of any solution but would prompt a serious response that would help clarify positions; though they may be discarded they nevertheless prompt people to do better solution thinking. An example of this type of thought process might be the well-worked idea that an embryo does not become an entity until it is about 14 days old, the time when twining is possible. This exercise may not change prevailing opinions but it does prompt participants to think about and verbalize the quality of an embryo that prompts people to desire to protect it.

Rationality. In my scheme of analysis, I include an evaluation of the rationality of a person's arguments. When a new idea is put forth, it can prompt a c*hallenging dialogue* among the participants. There is value in the challenge of dealing with new ideas in rational ways. Rationality as I use it is not the same as objective reasoning; rational arguments can also be subjective. In fact that is the type of argument that will perhaps be the most fruitful in resolving this conflict. The pattern expected is for one side to present a new idea based on rational thinking prompting the other side to craft new responding rational arguments, answering the new question and prompting the other side to think more deeply as well.

Endurance. Though problem solving solutions are the best bet to endure, we need to go beyond that to s*ustained flexibility*, a condition of the SVM that allows us to abandon unfruitful ideas and shift into better ones. This kind of dynamic approach not only helps the parties to get to good solutions without excessive fear of the slippery slope, it also helps society make adjustments in actions as needed to preserve the original intent of the solution while focusing on the best elements of the solution. In this conflict, the solutions will not be negotiated contracts that cannot be broken, but deeper understanding reached with honesty and justice in mind. There is an element of persistence in this concept combined with remaining nimble enough to react to advances in science. Problem solving solutions will need to be continuously revisited and adjusted to align with the slowly shifting norms of society, but as the parties build up trust, solutions will be better and more enduring.

Continuity. Part of c*ross-discipline literacy* should include a solid understanding of the history of positions of the parties. First, all participants need to know something about how the stem cell science evolved including the successes and the mistakes. For example, the mistake of using fetal tissue to treat Parkinson's disease has both scientific and ethical lessons that should not be forgotten. But the way the science developed in the U.S., with consideration of the ethical issues by most of the scientists, is part of the continuity of the science. Next, all participants need to know how the religious objections evolved. For example, where objections were derived from the abortion conflict, the parties need to recognize that as a mistake, but where objections were derived from the scientific abuses of the past, the parties need to be sensitive to the legitimacy of those concerns. To be literate, the parties need to understand the continuity, and literacy will be an important element in that understanding.

Hopefulness. There is a lot to be optimistic about in the promises of regenerative medicine, and there is no reason that Americans of all beliefs cannot work together to solve the scientific problems and the ethical concerns. In my interview with David Prentice, he proposed that a *shared vision* is the way we will get there. This strikes me as a hopeful approach, looking far into the future, and a grand idea that will help the parties remain hopeful as they craft a shared vision that encompasses humanity's best future. Among the experts that I interviewed, some were weak on hopefulness as they let themselves get caught up in the side issues of the moment. Regardless of their view, those who maintained a vision seemed to also remain hopeful. Vision is necessary, but a shared vision can lead the parties to good enduring solutions.

Chapter 5

Data

Collection of Data

The data consist of notes and summaries of 29 interviews with experts and other people with a special interest in the hESC research conflict, conducted over a 9 month period from November 30, 2005 to September 11, 2007.[57] The group included theoretical and applied scientists; public policy crafters and interpreters; clerics and theologians including Catholics, Protestants, and Jews; and professors, lobbyists, and associates of non-profit institutions. Some of those interviewed fill more than one role. For example, Fathers Austriaco and Pacholczyk are both Catholic priests and biologists; and Helpern and Breitowitz are both rabbis and professors.

I had a dramatic introduction to the debate when Professor Morowitz arranged for an invitation for me to observe the US Conference of Catholic Bishops (USCOCB), Committee on Science and Human Values, Dialogue on Stem Cell Research, September 9-11, 2005.[58] The first two presenters to the Bishops' meeting represented nearly opposite positions in the conflict, and that set a tone of acrimony for the first day. The first speaker was Dr. John Gearhart, Director of the Stem Cell Program at Johns Hopkins

[57] The appendices contain the details of the data collection results including sample questions, the complete interview record, and the summaries of each interview.
[58] The USCOCB did not publish a summary for this meeting and I am relying on my own notes.

a pioneer in embryonic stem cell research. Gearhart opened by saying that he did not expect to convince the bishops to change their minds about embryonic stem cells; his objective was to present the status of the science and explain why embryonic stem cell research is important.

The second presentation, by Dr. William B. Hurlbut, a Stanford Professor and member of the President's Council on Bioethics, was a summary of his recommendation of what some people call the *third way*, Altered Nuclear Transfer (ANT), a technological solution that may eliminate the need to destroy embryos in order to create new stem cell lines. Appendix A includes a short summary of the ANT concept. In addition to presenting the science, Hurlbut characterized the conflict and discussed solutions. For him, the conflict is not about a "slippery slope" problem; it is more like jumping off a cliff. The process of destroying human embryos for the sake of science is a huge jump and totally unacceptable. He also stated that the solution to the hESC research conflict will not come from debate or politics; it is a foundational issue. After the presentation, Dr. Morowitz asked a rhetorical question: is Hurlbut's proposed solution after all a way of pre-killing the embryo so that scientists could be isolated from the embryo destroying process? This question can only be answered philosophically and it illustrates the complexity of the arguments surrounding the definition of human life.

Though the bishops did not endorse either presenter, in the months following this meeting, I launched a systematic data collection process consisting of interviews conducted in three phases, a prototype group (3 interviews), Phases I (12 interviews), and Phase II (14 interviews). The prototype interviews were conducted with people I already

knew personally, who were willing to help out on the project. My objective for these interviews was to collect valid and useful data while testing out the questions and procedures. These interviews ended up providing some of the best data while validating the specific interview process selected. The lessons learned from these interviews included the verification that this was a highly significant and timely conflict to be studied, and that the interviews did not need to be as long as I had originally planned. The prototype interviews were 1 hour long; all the others were approximately 30 minutes long. A half-hour interview plan made recruiting high profile tightly scheduled people far easier while ensuring that the information collected was equally valuable and comprehensive.

The recruiting effort for the Phase I interviews included 30 letters from the committee chair to selected people who had attended the USCOCB dialogue on stem cell research, people who had recently written about the subject, and selected public figures who had probable interest in the topic. The latter group consistently wrote back respectfully declining the request, while the majority of the remaining people responded positively and eventually became part of the study. The 30 letters we sent out during Phase I produced 12 interviews conducted over a 6 month period. During these interviews several people recommended other experts to include in later data collection, usually requesting that we use their names when asking for an interview.

In Phase II, we were able to include in the interview request letter, the name of a particular individual who had recommended we interview the recipient. This time, I focused on non-Catholics, because I was confident that I understood the Catholic view

pretty well by that point.[59] This time we sent out only 20 letters but a larger proportion responded positively: 14 total. All of the interviews provided good data. Since Phase II consisted of some people recommended by those contacted in Phase I, it was likely that many of them would hold positions on the issues similar to those already interviewed. In some cases there was duplication on the characterization of the conflict but there were enough differences in the recommended solutions that each interview ended up adding clear value to the study. Though there was also some duplication in proposed solutions in a broad sense, follow-on questions indicated significant differences in methodology—each person ended up being an independent thinker; none simply toed their particular party line.

Interview Questions

Everyone interviewed was eager to tell his or her story, so it was not hard to get them to talk about the subject. Following are the specific questions that I used in the interviews:

- How would you characterize the nature of this conflict?
- Optional follow-on question - What are the most contentious issues in this conflict?
- What do you consider to be the most promising solution to the embryonic stem cell research conflict?
- Optional follow-on question - What would be your ideal solution to the conflict?

[59] While the Protestant and Jewish views are quite diverse on the issue, my intention was not to compile a complete and proportional representation, but to search for a greater variety of conflict resolution ideas.

- Optional follow-on question - How do you think this conflict will ultimately be resolved?
- Who are the most influential people thinking, writing, or debating this topic?

Otherwise the only questions needed were to ask for clarification on any particular statement that might be easily misunderstood. There was no need to include background questions, because most people were published on the subject, and those who were not, volunteered enough background information to satisfy my needs. Almost everyone came down on one side or the other, for or against hESC research. These simple questions accomplished the primary objectives of the interview.

Interview Objectives

Throughout the data collection process, I maintained the same these objectives.

- Determining how each individual characterized the conflict: science vs. religion, liberal vs. conservative, medical vs. philosophical, rational vs. emotional, cost vs. benefit, etc. This is important because I believe that how a person characterizes the conflict will influence the nature of their recommended solutions. For example, those who characterized the conflict as political tended to think a public policy solution was the best; those who characterized the conflict as a moral principal related to beginning-of-life issues tended to look for solutions that emphasized that moral principal.

- Collecting solutions. Almost everyone had good solution ideas, while most of them believed that their particular solution would work best. Other than those that advocated a technical solution such as Hurlbut's third way, most of the solutions related to methodology rather than actually proposing a concrete solution that would take into account the opposition's actual needs. Yet their instincts seem sound. The reduction of conflict will probably come from improved methodologies; such as deeper dialogue, objective education, reasonable legislation, and establishing relationships.
- Gathering leads on additional people to talk to or research. As stated above, Phase II interviews included many of the people recommended in Phase I, and most of the people recommended in Phase II have well-documented opinions available on line or in print.

There were certain trends that emerged from the interviews. It was not a surprise that there was some commonality in the characterization of the conflict, and that toward the end there was some overlap in the recommended solutions as well. When pressed, most people had their own unique twist or supplementary ideas to what otherwise might have added little value. The most common broad category of duplications came from those supporting the third way, a variety of possible technical solutions that in their minds made the conflict go away.[60] That approach came almost exclusively from the

[60] The President's Council on Bioethics, "Alternative Sources of Human Pluripotent Stem Cells" (Washington, D. C.: The President's Council on Bioethics, 2005).

Catholics and Evangelical Protestants. The third way approach is curious in that none of those who advocated liberalizing hESC research cared much for the third way approach, and some even pointed out their dislike of trying to avoid the problem that way, believing that those ideas would not actually resolve the conflict.

Almost everyone favored more education on the science, but for some there was a special emphasis on educating the general public as a category of solution and as an end in itself, an approach suggested especially by the lobbyists and non-evangelical Protestants. The emphasis on education as a solution is certainly valid, but in my view, it is an elitist's view, assuming the opposition to be ill-informed on the issues. I found this claim to be far from the truth among the people I interviewed. When pressed for another better conflict resolution idea, almost everybody, regardless of their position on the issue, emphasized a need for dialogue. In most cases the experts understood the idea of a deeper relationship-building dialogue.

Chapter 6

Analysis

Analysis Process

Using my pre-positioned assessment criteria of Efficacy, Inclusiveness, Expansiveness, Rationality, Endurance, Continuity, and Hopefulness; I analyzed just the solution recommendation portion of each interview. These became important objective tools to assess the quality of the recommendations. Using these criteria, I found that my post-analysis opinion of the quality of the ideas encountered was often far different from my immediate post-interview opinion. In many cases, the expert came across as well-polished, but after analyzing the interviews, sometimes I found that they contributed less substance to the issue than I had originally thought. In other cases, experts may not have had as much experience with interviewing and were not polished, but conversely had a great deal of substance to contribute. Good solutions did not necessarily fare well in all seven categories; in some cases a good solution did not lend itself well to a particular criterion but was strong in others. For example, a solution might be effective in the short run, but lack endurance; but it could still be an element of a good solution. In other cases, solutions that were more inclusive may have lacked expansiveness. I used the assessment criteria as a tool to help recognize elements of good solutions rather than as a means of scoring the overall quality of a particular solution.

To exploit this system, I needed an analysis technique to convert non-standardized documented responses into a more standardized format. I accomplished this by summarizing my notes as soon as possible after each interview using bullet statements, while relying on my hand-written notes created during the interviews. Immediately after that, I wrote a paragraph or two summarizing in complete sentences a short description of the solution or in some cases two independent solutions that were provided by the experts. In at least two cases, the people interviewed (Comstock and Cole) wanted to see these summaries prior to permitting attribution as part of the study. Upon review they both affirmed that ideas were correct, but Comstock noted that the summary was not her precise words. Given an opportunity to write their own responses, the language and style of writing might be different but the ideas would be the same. In most cases the summaries were designed to complement the bullet statements, not to replace them or even to include all aspects of the ideas presented.

The final step of the analysis was to assess each suggested solution in a largely subjective fashion. At this point the value of each suggested solution started to become clear, and these statements, by design, are totally separate from the points made by the experts. Opinions expressed in each analysis are my own, and the experts did not review these assessments. There would probably be numerous rebuttals if those interviewed had the time and opportunity to do so.

Assessment Criteria

First, proposed solutions must meet the general criterion that the character of the solution is better than a compromise. Solutions should allow those who disagree to preserve their own values. I maintain that people can align their own actions with their values, while not imposing their values on others. As a nation, we do that now. When dealing with the issues of war and peace, abortion, gun control, freedom to worship, and a number of other value-based issues, we manage to allow most people to live within their value systems. This does not mean that everyone will even go so far as agreeing to disagree. There will be those who will not be able to understand any other point of view and will attempt to influence the actions of others without even understanding the nature of the disagreement. Inability to find solutions to satisfy these extreme views will not be categorized as failures. In fact, to fully accommodate extreme views would undermine the kinds of solutions I am seeking and testing. In order to recognize good solutions that are better than compromises, I used a pre-positioned assessment schema consisting of seven broad criteria:

Table 6.1 Assessment Criteria for Solutions

	Criteria	Question	Example	Antithesis
A	**Efficacy**	Does the solution support the desired effect of reduced conflict?	Understanding how ideas relate to the opposing view.	**Entrenchment**
B	**Inclusiveness**	Does the solution accommodate more concerns on both sides?	Solutions that do not require compromising on beliefs.	**Fundamentalism**
C	**Expansiveness**	Does the solution explore new and creative ideas?	Identifying issues that would require the opposition to craft new arguments.	**Repetitiveness**
D	**Rationality**	Does the solution follow logically from a widely accepted position?	Starting with a widely accepted premise and logically consistent.	**Emotionalism**
E	**Endurance**	Does the solution go beyond a 5 year compromise?	Visionary ideas that focus on 20 year solutions.	**Urgency**
F	**Continuity**	Does the solution recognize and follow precedent?	Full consideration of social norms derived from history.	**Pragmatism**
G	**Hopefulness**	Does the solution accommodate an optimistic future?	Full consideration of society's best hopes for the future.	**Fearfulness**

Efficacy. By necessity, efficacy is the first criterion that I wanted to assess. This criterion assumes the desired effect is less conflict and tests solutions for indications that there is a potential to achieve the desired effect. Solutions that do not fully take into account the opposing views, especially where there is not full understanding of why people hold to an opposing position, would be weak on efficacy. The opposite of efficacy may lead to entrenchment, where both sides hold strong positions on either side of a discrete border, leading to stalemate, and no progress for either side, as in trench warfare. For example, a scientist might characterize all members of the opposition as religious fanatics who want to impose their narrow religious views on the rest of society. But the religious person might characterize all of the opposition as fascist-leaning

experimenters who would destroy life for the sake of science. To satisfy the test of efficacy there needs to be a reduction of bias in recommended solutions; it might only require giving the opposition a chance to voice their opinion while recognizing a full understanding of that position. This criterion is anchored in the Dual Concern Model (DCM) but it is looking for something more than just dual concern. By applying efficacy as a test, I am trying to determine if the person interviewed demonstrates not only a concern for the other, but also an interest in moving toward a solution. Though it is risky to attempt to assign motives to a person, I believe in taking statements at face value whenever possible, and a few people interviewed indicated that their solution would be to force the issue. Some even expressed frustration that they could not think of problem solving techniques to resolve the conflict.

Inclusiveness. This test is another dimension of the efficacy test. In the first test, I attempted to predict the outcome of a solution based on looking for a stated non-confrontational character of the description of the solution. In this test, I examine the thickness of the proposed solutions. These solutions should accommodate more concerns of the opposition, or accommodate the deep concerns of multiple and diverse stakeholder groups. There are as many variations and combinations of ethical ideas related to embryonic stem cells as there are entities that have established a written group position on the conflict. Since this quality resists any efforts to characterize the kind of discrete boundaries created by entrenchment, I will need to identify as many diverse views as possible, in order to evaluate solutions for the inclusiveness criterion.

Although it is impossible to fully satisfy everyone, proposed solutions would fail the inclusiveness test if they require a significant number of people to compromise on deeply held beliefs. For example, when there are those who hold a religious view that the soul enters an embryo at a very early stage, the other side should recognize the importance of that view, even if they do not believe there is such a thing as a soul.[61] Where there are scientists with a passion for understanding how organs develop, non-scientists should not dismiss this view as an idle pursuit of basic research, lacking in useful applications.

Inclusive solutions must also be unbiased as illustrated in the figure below. On the left are those against embryonic stem cell research for whatever reasons, and on the right are those who favor the research. Many are in the middle with mixed opinions. The dotted lines represent different solutions that may be viewed as biased, exclusive or both. The more inclusive and unbiased solutions represented by the longest dotted line at the bottom will have a greater potential to satisfy more people, pull people from the extremes toward more moderate mixed views, or to engage those who have no opinion (not displayed here).

[61] None of the people I interviewed mentioned the idea of a soul, yet the concept is tremendously important for many religions, especially Christianity. I suspect that the religiously-motivated people have found that the arguing a point on the basis of the existence of a soul does not work well in a secular context. The concept also introduces unwanted confusion, because historically theologians have argued that the ensoulment may occur at some other time than at conception, thus undermining the arguments of the opponents of hESC research.

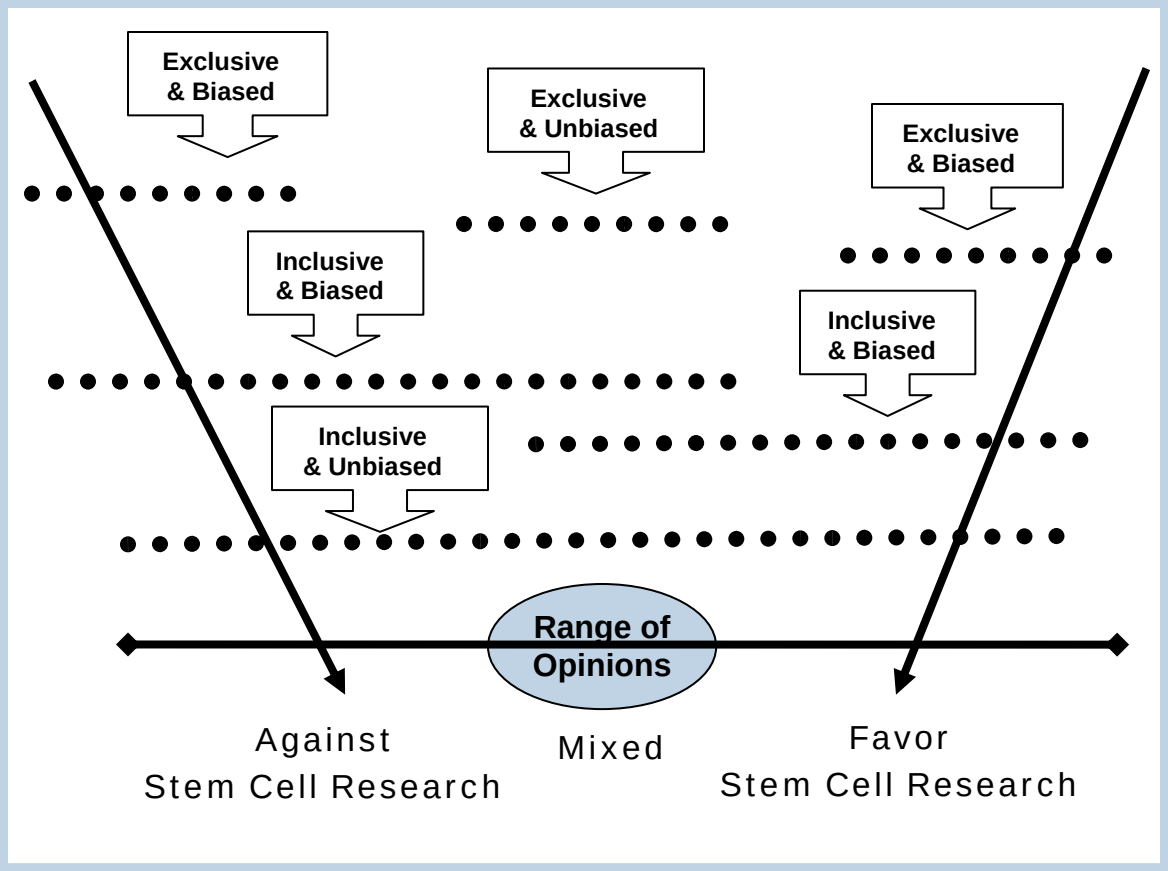

Figure 6.1 Inclusive and Unbiased Solutions[62]

Expansiveness**.** The expansiveness test measures the creativity of ideas supporting new potential solutions. While it would not be necessary that these solutions be irrefutable, they should be fresh and challenging. These fresh ideas (or rejuvenated old ideas) would not take the form of responding to the opposition or trying to refute an opposing position, but instead would cover new ground. The best in this class would require the opposition to craft new arguments to counter these expanding ideas, having the effect that everyone would be forced to work on their own established positions, giving more thought to all sides of the issue. An example would be a technical case that

[62] Dean G. Pruitt sketched out a similar diagram for me during a personal conversation.

Morowitz has proposed; if the blastocyst is brought down to absolute zero (0 degrees Kelvin) in a laboratory, we know that all atomic motion would cease. It then could be returned to room temperature and used as a source for stem cells. It could not have been alive at absolute zero, so the idea challenges the view that harvesting embryonic stem cells is tantamount to killing. Though there may be many counter arguments to this suggestion, it has the effect of forcing more thought to one of the basic issues of what it means to be alive. This idea is not repetitive and passes the test of expansiveness.

Rationality. The rationality test should verify that a proposed solution to the conflict can stand up to classical logical arguments. In this particular conflict, rationality does not favor either science or religion, because rationality, as I use, is not synonymous with the scientific method. I derived this test from Aristotle's ideas of reason,[63] principles that emphasize methods of arguments that are consistent and fair. They become, in practice, rational methods of discussion between those in conflict. I found in my interviews that people on both sides often used arguments similar to Aristotle's principles effectively, one of which was to follow a point to the end result. For example, those who favored hESC research usually emphasized the anticipated consequences of new cures, while those opposed often emphasized the consequences of destroying the embryo; an act that many believe reduces society's respect for human life. Both approaches are valid in the classical sense.

[63] Gideon Burton, "The Forest of Rhetoric: *silva Rhetoricae*." Brigham Young University, http://rhetoric.byu.edu/ (accessed November 14, 2007).

Endurance. To pass this test, solutions should be more visionary, looking at a distant time horizon of at least a couple of decades, not just pushing the problem out to the next group of decision makers (e.g., the next government administration). Such solutions as a moratorium on new lines of stem cells for 4 years would fail this test. That idea is not a solution; it is only a delaying tactic forcing someone else to deal with the issue. Although these kinds of tactics reflect a sense of urgency, allowing decision makers to get on with other business, this approach, in my view they indicate a lack of courage. Although it is not always easy to visualize the technical world out to the next generation, anticipating new scientific breakthroughs would lead to more enduring solutions. For example, a proposal to provide funding to search for sources of stem cells that would be more widely accepted as ethical, or an initiative to more positively establish the benefit of embryonic stem cell research would both be more visionary solutions.

Continuity. To be an effective solution that takes into account historical continuity, ideas should recognize the norms of society. When judging proposed solutions, I assessed the degree to which proposals aligned themselves with the American idea of freedom and justice. My emphasis in this exercise is to recognize that we live in a liberal democracy, influenced by Judeo-Christian values, and ruled by laws derived from the constitution and interpreted through a filter of precedent. A proposal that recognizes the need to encourage scientific enquiry, while considering that there must be limitations to avoid reintroducing some of the human rights abuses of the past, would score well under this criterion. For example, any proposal that would single out any ethnic or social

group as a source for hESC materials, or would target groups to unequally enjoy the benefits (other than for sound medical reasons), would be a problem under my system of evaluation. To pass the continuity test, solutions need to consider social norms along with ethical sensitivities, recognize the boundaries, and establish reasonable safeguards.

Hopefulness. Although the previous criterion, continuity, may be weighted toward a position against stem cell research; the criterion of hopefulness, may be weighted more toward a position that favors hESC research. But they are both valid and important considerations. No single solution will get a perfect score in all of these criteria; there are bound to be tradeoffs, so including continuity and hopefulness will promote balance.

This final measure of the quality of proposed solutions is even more forward thinking than the endurance test. The hopefulness test envisions humanity's best future and demands that solutions be optimistic. A solution that proposes dropping stem cell research simply because it is costly, would fail this test. Proponents could make a strong case if their solution supports cost effective and solid basic research. Though they may not be sure of the exact application, their aim is one that most people value. Though this may be more difficult to sell to the public at large, it is more honest and challenges weaker options such as the less controversial approaches such as using umbilical cord or adult stem cells exclusively. Fearfulness is the enemy of hopefulness. Arguments insisting that this kind of research should not even be started because it could lead to abuse would fail the test. This does not mean that only the most visionary people will win this type of argument and that there is not significant risk in moving forward. Rather

it moves the debate out of a cost and benefit analysis, and back into the ethical realm where the issue really needs to be decided.

Though it is possible that some of the tests may favor one side or the other, taken together the tests provide a framework for examining the proposed solutions to the stem cell research conflict that distill out of the data in this study. Again, it is unlikely that any proposed solution would satisfy all of these tests, but satisfying just one of the tests would be sufficient to advance a proposed solution to candidate solution status.

Summary of Analysis

To summarize the results I assigned a value to each assessment for each criterion (+, -, or 0). My objective was to decide if the recommended solutions lend support to the criteria, do not support the criteria, or remain neutral relative to the criteria. The methodology of gathering data, summarizing, and subjectively analyzing the summaries does not support a more objective numerical analysis, so my approach is rather to use the table as a guide for selecting the best solutions not involving any firm rules of selection. Naturally the best solutions would include several "+" values but would not necessarily score well in all areas. But it is important to bear in mind, that this table is not evaluating the people, but rather the proposed solution they presented to me.

Table 6.2 Summary of Analysis

Assessment	Efficacy	Inclusiveness	Expansiveness	Rationality	Endurance	Continuity	Hopefulness
Positive	**8**	**11**	**10**	**25**	**14**	**17**	**16**
Neutral	**16**	**9**	**10**	**4**	**7**	**9**	**10**
Negative	**5**	**9**	**9**	**0**	**8**	**3**	**3**
				*	*	*	*

Though not intended as a rigidly objective tool, I was able to identify those solutions that scored the best by combining the positive, negative, and neutral assessments. Summing up evaluations of all solutions from all participants, the analysis criteria that scored high as an aggregate were *rationality, continuity, and hopefulness*. Almost everybody had what I judged to be highly rational solutions and nobody had irrational ideas. In addition, *continuity* goes along with *rationality*, because there should be a good starting point as people develop their ideas in a rational way. Most people had thought about the important aspects of science and religion in our society and made sure that our history and widely-held assumptions (*continuity*) did not get ignored. *Hopefulness* was also strong across the spectrum of ideas. Nearly everyone had great hope for the future and the promise of stem cell therapies, though there was sharp disagreement on how we should get there.

Among those people I interviewed, I concluded that the ideas they proposed generally demonstrated weaknesses in the categories of *efficacy, inclusiveness, and expansiveness.* Of course it is hard to judge *efficacy* before ideas have been fully implemented, but there were a few solutions that had been tested on a smaller scale, and those will likely demonstrate greater promise to succeed when given the opportunity to be applied in a wider implementation process. The poor results of *inclusiveness* and *expansiveness* were personally disappointing. It is perhaps symptomatic of this conflict that many people, in my view, have not made enough effort to include the views of the opposition, or perhaps to give them enough respect to provide expanded challenges in new creative ideas that would naturally demand creative answers. The result would be better mutual understanding and better arguments on all sides. *Inclusiveness* and *expansiveness* are perhaps areas that we all need to put more effort into, if we hope to resolve this conflict.

Chapter 7

Solutions

Conflict Categories

The Barbour scheme of religion and science conflict resolution includes four major categories: *Conflict, Independence, Dialogue,* and *Integration*.[64] To this scheme, it was necessary for me to add one more category, *Innovation*, including those solutions that move the conflict away from a social conflict issue and over into a more technical realm, attempting to overcome the conditions of the conflict by circumventing the conflict.

Conflict – These proposed solutions tend to fuel the conflict.

Among those interviewed, there were a few who approached the problem by suggesting that the solution should actually be a form of conflict, a winner-take-all scenario, where their position wins. On the science side, an initial statement fueling the fires of conflict might be something like, *all avenues of research should be pursued—there is no telling what kind of results might arise from the various sources of stem cells*. On the religious side, an initial statement might be something like, *We need to stop killing human embryos—these aren't just potential human beings; they are actual living*

[64] Barbour, *When Science Meets Religion*, 2.

humans. Usually, these statements were intended for effect, to make it clear on which side the interviewee stood, and in many cases, as the interviews unfolded, these people would relax their position. They recognized that the problem was not that simple and that those kinds of solutions would not really be acceptable ones in a conflict problem solving methodology. In a few cases, the proponents just restated their position using milder words, but they still held that their own view could be the only acceptable solution to the conflict. They had trouble seeing the problem in any other way.

There were some who equated the hESC conflict with the predominant bioethical conflict of American society, becoming just another front on the war over abortion, a position that is troubling to Cameron.[65] In these interviews, people on both sides tended to attribute these types of abortion-based views to their opponents claiming their opponents consider the issue to be basically about abortion. It is uncertain that any of them believed themselves that it was all about abortion. It has become a way of demonizing opponents and setting up a straw man to tear down. There are probably few knowledgeable people who actually think the hESC research conflict is simply about abortion, though they might argue it that way if provoked to do so.

As Habermas has pointed out, the discussion of the moral status of the embryo in the United States and Germany has largely been along the lines of the abortion debate, but in important ways, the hESC issue is different from abortion.[66] In the stem cell debate, it would be difficult to argue for the creation of hESC lines on the basis of a

[65] Nigel Cameron's ideas resulted from my interview with him on September 11, 2006.
[66] Habermas, *The Future of Human*, 22.

woman's right to choose. If nothing is done with a frozen embryo but to keep it frozen, the woman who donated the egg is not hurt in any physical or emotional way. The only way this could become part of the traditional *right to choose* argument is if a woman is either forced to have an implantation or denied one for other than medical or economic reasons. It is hard to imagine either of these scenarios occurring in our society. In fact, the argument almost gets turned on its head—as more and more eggs are needed for regenerative medical therapies, women may become the actual victims of hESC research.

On the right-to-life side, some have suggested that the frozen embryos do not have to be destroyed. They should be allowed to live until they can be implanted in the donor mother's womb or adopted by another woman. These solutions are unrealistic, and most of the more than 400,000 frozen embryos in this country someday will lose their viability naturally or will be destroyed deliberately. All of these embryos could not possibly be implanted. Unlike some Protestant denominations, the Catholic Church is consistent on this issue. In my interviews, some Catholics reminded me that there wouldn't be hundreds of thousands of frozen embryos in storage if our society had heeded their warnings against IVF in the first place.[67] In my view it is likely that some Catholics and Protestants who would otherwise be concerned over the destruction of the embryo participated in the IVF process in their desperation to have a child of their own.

In my interviews, there were other versions of using subtle forms of actual conflict as a solution to the conflict. Some solutions emphasized the idea of education

[67] On September 9, 2005, I attended a highly informative seminar conducted by Rev. Dr. Tadeusz Pacholczyk that laid out the Catholic position on ESC research. Several, but not all, of my references to the Catholic Church came out of that experience.

and understanding the truth. These ideas sound good on the surface, but as we got deeper into the discussion of the intent of education, it became clear that the emphasis was on a general education covering the scientific facts, and then taking some of those facts to support one's chosen position. There is a grain of truth in the observation that the public needs to be more aware of the technical details, and part of the solution may lie in education, as discussed in the higher levels of conflict resolution methodologies discussed below. These views were proposed by people on both sides of the conflict, thinking that the facts would provide overwhelming support to their position.

Expressing the solution in terms of conflict is not all bad; it is only bad if the opponents get stuck in this sort of conflict attitude. Though many of those interviewed expressed or implied that their ideal solution would be for their side to win the day, almost everyone was focusing on more accommodating solutions. In every case, the interviews started with a discussion of the character of the conflict. The type of solution arrived at arises out of a view of what the core of the conflict is. In cases where the solution does not address the actual problem very well, it is unlikely that the proponent has an understanding of the nature of the conflict that would be widely accepted by his or her opponents.

The first answer provided in interviews on the question of a solution often dealt with an ideal outcome, but deeper into the interview the same people focused less on the actual solution and more on the best way to arrive at the best solution regardless of the outcome. The method of arriving at a solution is a necessary part of this analysis, and is the focus of the remaining categories in the Barbour conflict resolution scheme.

Independence – These proposed solutions allow each side to maintain its position, preventing overt conflict, but not creating lasting solutions.

Independence is such an important American ideal that many people think they have arrived at an ideal solution when there is a separation of the two sides of a conflict. Far from it—this approach does not address the conflict directly and only moves the issue away from the public consciousness. Of course this will not happen with hESC research conflict—it is in the news nearly every day and more and more people are becoming interested stakeholders in the outcome. Because of our constitutional right of freedom of religion, there is an oversimplified view that religion does not belong in a public forum. But religion is an integral part of American life and as Eliade points out, it is deeply ingrained in western culture. No matter how much "the secular person" would like to be rid of religion, it is ever present in the origins of people's ideas.[68]

Independence as a solution cropped up most often when the conflict was characterized as a public policy problem. The way this was expressed was typically something like: *Religion is a private matter that has no place in public policy decisions.* Though religion is an individual choice; there is no reason to restrict public discussions of religion. Along with freedom of religion goes freedom of speech. Those with religious views that consciously inform them on this conflict have a right and duty to speak out about it. Those who believe that science and religion should go their separate ways are partly responsible for a divide described by Snow, to the extent that it exists in our

[68] Eliade, *The Sacred and the Profane; the Nature of*, 201.

society.[69] What is more, this view operates under a sort of naiveté, not recognizing that science, when it goes beyond a search for facts and into a search for applications, touches society in profound ways and may move over into the realm of religious beliefs. Perhaps the most notorious example is the development of the nuclear bomb which forced society into an overwhelming moral dilemma that touched on many different religious beliefs, especially for those who draw their pacifism from a conscience that is formed or influenced by religion. In my view, religion does have a place in the public forum as long as it does not exclude the right of expression of other religious or non-religious views and other rights guaranteed by the Constitution.

The idea of independence as a solution also tended to link the problem and the solution to either the Republican or the Democratic Parties. When characterizing the problem, some see President Bush as the villain and former President Clinton as the hero, or vice versa. In reality both administrations carried out policies that may be supported by either side of the issue. There have been policies advanced that are both liked and disliked by nearly everyone, illustrating the problem with compromise solutions. For example when President Bush released funding for hESC research, one side saw this as moral laxity by providing support to stem cell lines that had been derived from killing embryos, while the other side saw it as a severe restriction of science in not funding the creation of additional stem cell lines.[70] In reality, there is no statute against creating stem cell lines and not even an executive order restricting funding. An administrative policy

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[69] C. P. Snow, *The Two Cultures and the Scientific Revolution* (Cambridge: Cambridge University Press, 1959), 9.

[70] Many of these ideas are derived from my interview with Prentice, who was keenly aware of the politics surrounding the ESC research conflict.

restricts the National Institutes of Health (NIH) from funding specific research, and this restriction will lapse in 2009, unless the next administration takes similar action.[71] There is something in this decision for both sides to dislike. If the current solution is weak, then any new compromise solution promulgated by the next administration will be equally weak, unless it can go beyond independence and compromise.

In my view, the idea of a negotiated solution, an aspect of independence, will not resolve this conflict because people cannot compromise on their values. It will be impossible to please everyone, and even some of the staunchest opponents of hESC research that I interviewed admitted that the nation is already tolerating the practice, and there only recourse is to respectfully object, while continuing to raise the consciousness of the population. There were several who proposed good faith compromises which demonstrate recognition of the need for restraint when it comes to research involving human life, but which probably would not satisfy either side. For example, a few people, noting that Congress has been unable to pass a law prohibiting cloning, suggest such a restriction should be part of a compromise involving hESC research. Ironically, people on both sides of the conflict have proposed this. Comstock said that the very first step should be to outlaw cloning, while on the other side, Doerflinger has suggested in debates that society should at least prohibit human cloning. But the problem becomes one of definition; is allowing cloning for research while prohibiting reproductive cloning what people have in mind when they think of the potential horrors of cloning? Many religious

[71] The NIH web is a good source of information on all aspects of stem cells. I interviewed several people at NIH who were able to clarify the administration's position on ESC research. NIH Stem Cell Information, "Stem Cell Information," National Institutes of Health, U.S. Department of Health and Human Services, http://stemcells.nih.gov/index (accessed November 14, 2007).

people are wary of human cloning of any kind, because at the start of the process there is no difference in the cloned embryo; the only difference is whether it is implanted or not. Some proposed solutions for replacing hESC line creation through frozen embryos involve creating an embryo through somatic cell nuclear transfer (SCNT), in other words, cloning. SCNT could have the advantage of introducing to regenerative medicine stem cells that are genetically identical to the patient, eliminating any problem of rejection by the body.

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Innovation – These solutions may reduce the conflict through technological innovation. They can create partial win-win solutions but society misses the opportunity to resolve the social conflict in a more enduring way through dialogue and integration.

Using Barbour's categories of religious conflict, the interviews exposed solutions falling in each of the four categories; in addition there were many solutions that fell into a category slightly outside of Barbour's scheme, in my view. Appendix A provides a summary of these concepts. These are primarily variations on four solutions outlined by the President's Council on Bioethics (PCOB), all of which would theoretically produce pluripotent stem cells without destroying actual embryos.[72] Each of these is technically feasible, but at the time of the publication of the white paper no one had yet used these methods to produce human stem cell lines. Researchers are working on this problem, and they claim that they will produce something valuable soon.

[72] The President's Council on Bioethics, *Alternative Sources of Human Pluripotent Stem Cells* (Washington, D. C.: The President's Council on Bioethics, 2005).

Periodically, someone will announce a breakthrough in one of these techniques. Though some may have been overstated, generally there has been some remarkable progress. One or more of these could turn out to be a good technical solution with a potential to reduce the intensity of the conflict.

It would be tempting to latch on to these solutions as the perfect problem solving resolution, a "third way" as some of the proponents have classified these approaches, neither destroying embryos nor restricting research to adult stem cells only. However, many scientists seem to be lukewarm about pursuing these solutions and perhaps only those who are motivated or supported by religious concerns over destruction of embryos have much interest in these ideas. In my view, we should pursue all solutions, and I disagree with those who take the position that we should not waste our resources on solutions that would be unnecessary were it not for the opposition to harvesting hESCs for research purposes. Conversely, in my interview with Morowitz, he predicted that bio-researchers will not be satisfied with these kinds of solutions because, by definition, they limit the ability to directly explore human development at the very earliest stages, a major objective of hESC research. Even some who are more religiously motivated are lukewarm about some or all of these techniques. Some techniques do not solve the ethical concerns because the processes are getting too close to the beginning of human life, and others raise more ethical concerns, like the harvesting of large numbers of human eggs leading women to become "egg factories" operating for the benefit of the elite of society. In an open society, most people would judge this kind of extreme practice to be unethical, and it would likely be outlawed, but as some of those I

interviewed pointed out, these kinds of thought experiments help us refine our thinking about the complex ethical issues involved with hESC research conflict. One expert, ironically pointed out that some of these technical solutions would involve destroying embryos to develop a method making it unnecessary to destroy embryos—a moral inconsistency.

Another even more controversial innovation solution is to restrict research to adult stem cells only. If the real goal is regenerative medicine that eventually produces important cures for debilitating diseases for people in this generation, adult stem cells would probably be the place to focus. Casper is a proponent of this approach. Curing childhood leukemia has become almost a routine occurrence for his group, and now they believe they are on the brink of coaxing cord blood stem cells to create nerve-producing stem cells. Cord blood and other adult stem cell sources may be far from being fully exploited. But since many scientists believe the more broadly useful therapies will eventually come out of hESC research, the cord blood and other adult stem cell sources become only short-term solutions innovation solutions.

There is an even more fundamental problem with these innovation solutions. They do just that; displace the problem without really addressing the core conflict. Though it probably will not happen, conflict resolvers should be pleased if almost everybody on both sides became satisfied with one or more of these solutions, making the problem go away. Even so, we would have missed an opportunity to work on a major bioethical conflict in a way that avoids the polarization that the abortion issue has

generated. Resolving this problem in a way that bridges the boundaries of science and religion could have synergistic benefits for everyone.

When I attempt to insert innovation into Barbour's hierarchy of conflict resolution stages, it falls somewhere in the middle, better than not engaging with the opposition, but not as good as real communication and problem solving. So for the moment, we can put these technical solutions to the stem cell conflict aside while we focus on those solutions that fall into the other Barbour categories.

Dialogue – These solutions emphasize communications and consider the views of others. These efforts to break down boundaries can be the beginning of deeper and more enduring conflict resolution.

Almost everyone interviewed proposed some sort of dialogue as a solution. For some, dialogue was an end in itself; for others, dialogue was a necessary step along the path to a real solution. Many people believe that they have finally arrived at the pinnacle of conflict resolution when the parties have finally begun to talk in respectful ways, but in my view, this achievement alone has probably seldom actually resolved a value-based conflict. Unlike the conflict over abortion and creation/evolution, the hESC research conflict has not reached the same level of polarization and there is more actual healthy dialogue taking place. That is one reason why there may be a real opportunity to resolve this particular social conflict in a productive and harmonious way.

In the earlier discussion of education as a solution, I noted that oftentimes the idea of education is another way of attempting to get people to see the issue in the same way

that the sponsors and teachers do, with the hope that those who are undecided, will come to the same conclusion--a sort of an indoctrination approach. Although the motives of the educators may sometimes be questionable, no engaged conflict resolver would view education as bad thing. In this case, a more widespread understanding of the science would benefit the American public, as opposed to the current situation where people often merely feed on sound bites that provide false hope or needless despair, depending on the political position of the speaker. Some of the proposed solutions included at least a basic education as a prerequisite to a more productive dialogue. Certainly to carry on a dialogue, people need to know what they are talking about. For example, just as the experts may cause confusion in the stem cell debate by introducing the abortion standoff, many in the religion side in our society make the same mistake, some even thinking that the current sources of hESCs are aborted fetuses. This mistake is understandable both because of the technical language used (embryo) and because of the history of attempting to harvest stem cells from aborted fetuses.[73] Early attempts to cure Parkinson's disease used materials extracted from aborted fetuses, and perhaps some people have not made the transition to the idea that a more deliberate and directed sort of stem cell therapy derived from pre-implanted embryos may be the ultimate cure for the disease. Misinformation can only be countered with formal or informal educational efforts.

In order to move into a more productive dialogue among participants in his program, Cameron told me he has one firm rule: *abortion will not be part of the discussion*. He insists that the stem cell debate should not become another front in the

[73] Working with aborted fetuses is how Gearhart got his start in the field of human ESC research.

war over abortion and when the discussion deteriorates into any aspect of abortion there can no longer be an effective dialogue. He has shown that we can and should unlink these two issues. Cameron has found that among experts, when keeping abortion off the table, his organization has made great progress by bringing together people who would normally not have the opportunity to formally speak with each other about the topic, such as Doerflinger and Norsigian, two people who approach the conflict from dramatically different perspectives, Catholic ethics and women's rights, respectively.[74]

Among the many creative problem solvers I interviewed, Johnston at the Hastings Institute stood out as somewhat unique. Her first answer to my questions was in fact her own question, *why would you want to solve the stem cell conflict*? For her, this kind of conflict is the American way of resolving issues and establishing the norms of society.[75] If you define the conflict as the actual public discussion over the issue, she is right. Of course, it is healthy to participate in a dialogue, and she has recognized that the solution will start with communication. But to define the solution as merely the public discussion is not enough, and we do want to go beyond discussion to resolution. The type of in-depth public discussion is at a relatively healthy level, thanks to people like Cameron and Johnston, but it could easily slip into an unhealthy and unproductive mode, such as has happened with abortion, and the creation and evolution debates. When the communications are carried out through bumper stickers, the interaction has turned from

[74] Cameron is president of The Institute on Biotechnology & the Human Future. They offer assessments of the scientific benefits and risks of new developments in biotechnology, while at the same time analyzing their cultural and ethical significance according to their web site, Nigel M. de S. Cameron, "About the Human Future," Institute on Biotechnology & the Human Future, http://www.thehumanfuture.org/ (accessed November 14, 2007).

[75] Johnston still has a strong New Zealand accent, notes her country of origin in her communications, and expresses great admiration for the American way of dealing with social conflict through public dialogue.

a dialogue into competing ideologies. So far this has not happened in the stem cell debate.

Other areas of public information can become misleading, when the issue is simplified down to a sound bite. When politicians parade people who have been victims or beneficiaries of action or inaction in the area of hESC research before television cameras, it becomes little more than a sort of electronic bumper sticker. The Bush Administration is fond of assembling what some call *snowflake babies* when establishing a policy, or signing or vetoing a bill. These children are the product of adopted embryos, genetically different from both the birth mother and her husband. The same embryos that had been the source material for these children could have been taken from an IVF clinic instead of being adopted turned into an embryonic stem cell line. Seeing these happy children being loved by their adoptive parents and playing with each other is intended to pull at the heartstrings of the public and turn them against hESC research. On the other side, producing a 30 second political advertisement with footage of Christopher Reeve as a Quadra paraplegic or Michael J. Fox speaking on his own behalf, criticizing the Bush Administration for their failure to take action to help create cures for spinal cord damage or brain cell loss is not much different.[76] These approaches obscure the more substantial dialogue by creating emotions that tend to turn dialogue into monologue, unfortunately another American way of resolving conflict.

[76] When I asked Zoloth about sound bites created by public figures like Michael J. Fox, she correctly pointed out that they have a right to air their opinions just like any other American. There is also value in that these types of hyperbolic communication raise the public consciousness of the issue, a necessary step to resolving the conflict in a just way.

Instead of oversimplifying the debate, some of those I interviewed pointed out that there may be too little consideration given to the rights of the donors who will need to be an essential element in creating new hESC lines. Egg donation is not a simple and painless process, and to make the sacrifice to have one's own child through IVF is far different from donating for the sake of an uncertain future in research. Others believe that the contention that there are hundreds of thousands of frozen embryos available that would otherwise be destroyed but could be put to better use to create new stem cell lines that could produce cures for debilitating diseases is merely a smokescreen. Under normal scientific and medical ethics, these embryos would have to be donated under strict procedures, and to be valuable materials they would have to be considered to be in good condition. To create new stem cell lines, many would prefer to start from the beginning, thus ensuring the best scientific practices throughout the process.

Mixing the two objectives of producing children through IVF processes and creating embryonic stem cells as a byproduct may present problems. The reason excess embryos are created is to improve the probability of a couple producing a child and to establish a repository in the event that something goes wrong in reproduction and reducing the cost and complications of having to repeat the process for future children. However, there is no reason that an acceptable and ethical process could not be established that would allow couples to preplan through a definitive process the donation of an embryo for research purposes. This could be considered by many to be a just and morally acceptable solution. For others it would not only be wrong, but it would be a premeditated error. Furthermore as Johnston and others point out, the best therapies will

most likely someday require "designer" stem cell lines, genetically tailored to the patient—one egg donation for each recipient.

An important and beneficial aspect of good communication is transparency. If the press can get beyond the news releases and sound bites, the conflict will gain clarity within the public sphere. The press is responsible for bringing the Korean scandal to the United States in the first place; and also for exposing the fraud, exaggerated promises, and unethical processes of the scandal. The free press is a necessary element, and the experts in the NIH indicated that the press can help keep everyone honest while keeping the public informed. Along with this idea, NIH scientists indicated a need for legislation or a comprehensive administrative policy to clarify the processes researchers can legally maintain in their research. Because of lack of clarification on the part of the Congress and the Administration there is confusion over what is allowed and prohibited in the area of hESC research. Without the guidance that should be provided by the General Counsel, institutions have been forced to set up their own rules. Some institutions claim to be nervous about using the same facilities to conduct separate research from separate sources of funding. But the Government has only said that the funding lines have to be kept separate, to prevent federal dollars from being used for research on unapproved stem cell lines. The NIH longs for clarification that its government scientists could pass on to their partners.[77]

[77] I interviewed three NIH employees: Horne, Gadlin, and Cole who were supportive of their institution but noted how the research climate can change from administration to administration. NIH is doing everything they can to promote stem cell research while carefully following all the rules. Not surprisingly, everyone would like to see increased research budgets addressing a variety of public health issues.

In addition to Cameron, there have been others who have used public discourse effectively dealing with a great variety of bioethical issues. For example in the Cambridge Study *Shaping Abortion Discourse: Democracy and the Public Sphere in Germany and the United States,* there is a good treatment of how even the polarizing debate over abortion can be handled.[78] In another case, after a trip to the United States, the German philosopher, Jürgen Habermas, stated that there has not yet been enough public discussion on either side of the Atlantic on the issue of stem cell research and the related area of pre-implantation genetic diagnosis (PGD).[79] The Hastings Institute and a number of other educational and think tank organizations have held public dialogues on the stem cell conflict, but they have not always been widely advertised or widely attended beyond the elite in the bioethics field. If there is any hope of getting the information out to the public, it may be through the internet. Virtually everything that goes on in the public, whether sponsored by a government entity or a non-profit organization, appears to be readily available on the internet. Among the most useful sites is the one sponsored by the NIH with a vast number of links to practically everything that is available on line.[80]

Among those interviewed there were various suggestions for deepening the dialogue, such as the theological idea of allowing people to tell their story in their own way. Given the divide that exists between science and religion, this may be difficult. People do not share the same language, background, or motivations. Scientists need to be able to explain their motives and express clearly why they are concerned about

[78] Ferree, Gamson, Gerhards, Rucht, *Shaping Abortion Discourse,* 61.
[79] Habermas, *The Future of Human,* 75.
[80] NIH Stem Cell Information, "Stem Cell Information," National Institutes of Health, U.S. Department of Health and Human Services, http://stemcells.nih.gov/index (accessed November 14, 2007).

government restrictions on their work. Though many in the public may believe so, it is unlikely that many scientists are motivated primarily by fame and fortune. Part of the problem is that there is a grain of truth in that idea, and there have been some notorious examples of inflated egos and greed, such as the South Korean case cited earlier.

Those who are religiously focused need to explain why these kinds of life issues are so important and why they are concerned about unfettered research. All sides need to be able to tell their stories, not just the unimportant surface facts of their beliefs, but in a deeper way: their greatest hopes; their worst fears; and what it means to be human. Scientists and the religious have the same need to tell their story, and this will be a way to close the gap for at least a few who are given this opportunity. Though it is an important insight that keeping abortion off the table allows for a more unbiased dialogue, restricting the subject makes it difficult for people to get their story out. A deeper conflict resolution may be sacrificed for the sake of efficiency.

Of course, allowing people to tell their story requires other people to listen. Science and religion are in two separate realms, but almost everybody occupies both of them simultaneously according to Eliade, whether they recognize it or not.[81] So why is it that people have trouble understanding each other? It may be because they are unwilling to listen; they are trying to make sense of their world and have become boxed into one epistemology, mistakenly thinking there is only one way of knowing. If they have chosen exclusively science or religion as their way, they may conclude that there must be something wrong with the other. There is a way to resolve this; start by listening with the

[81] Eliade, *The Sacred and the Profane; the Nature of Religion*, 201.

intent of understanding without writing it off as foolishness; ask questions that demonstrate an interest in understanding and reveal why it is so difficult; and believe in the legitimacy of the other's epistemology.

As a follow on to the education leading to dialogue-type solutions, Zwanziger cited the technical alternatives mentioned above, not as the silver bullet in the arsenal of solutions, but rather as a type of theoretical talking point. The "third way" solutions raise new arguments and prompt deeper discussions into the core of the issue. These new technologies prompt people to understand more clearly not only the scientific needs of the researchers and the ethical concerns of the religious, but also the nature of the kind of human life we are dealing with. Along these lines, a provocative thought experiment proposed by Morowitz is to cool an embryo down to absolute zero temperature (zero degrees Kelvin) where there would no longer be any molecular movement in the cell, a condition analogous to death. Then by warming the embryo back up again to the ambient temperature, there would be no damage done, and theoretically, stem cells could be extracted and used to create new stem cell lines for research. This suggestion challenges over-simplified definitions of life and death, a process that may be necessary in the type of dialogue that I believe will lead to solutions to the hESC research conflict.

Integration – These solutions seek integration of the disciplines of science and religion. These ideas lead to systematic processes, deeper partnerships, and enduring solutions.

The ideal solution will of course include good communications, but should go beyond that into Ian Barbour's fourth category of interaction between science and

religion into the realm of *integration.*[82] Totally engaged communication is a necessary but not sufficient aspect of these kinds of solutions. Integrated solutions must include at a minimum a shared vision, respect for all stakeholders in the conflict, an unwavering commitment to truth, and a methodology that addresses the conflict directly and focuses on a practical solution.

Throughout the data collection phase of this project, I insisted on pursuing solutions that would not be one sided. Prohibiting hESC research or allowing it to go on unfettered would both be one-sided solutions. Of course that means that those who would like to see one of those solutions have to become more realistic about the options, realizing that a whole spectrum of outcomes lies between those two extremes. At this point we cannot know what the specific outcome will be, nor can I recommend one. But we can be confident that if the process is robust, just, and visionary, there will be a good solution that distills out in the end. To be a good solution, it will also have to be dynamic. As the science advances, more challenges will emerge.

Many of the solutions proposed emphasized good communication, but did not go deep enough. Martin Buber recognized this need in his concept of deeper relations using genuine interaction that goes beyond what he calls technical dialogue. Technical dialogue is prompted by the need for objectivity, a need that several of those interviewed noted. There is a need to educate and establish a baseline of a common language. So often those in conflict do not operate from the same definitions of the words. Barbour agrees that there is a need for shared words, but he also believes there needs to be a

[82] Barbour, *When Science Meets Religion,* 2.

relationship to engage in genuine dialogue.[83] Buber's approach not only deals with words, definitions, and assumptions: he promotes a certain respect for the origin of words and ideas. This should prompt us to work backwards toward, not only common understanding of the definitions and assumptions of relationship interactions, but common understanding of our humanity and how we got to where we are.

We also need to understand the assumptions of the other. Even if we comprehend the words, we may assign our own assumptions, or more likely, the negative of our assumptions to the other. For example in the hESC debate, a common assumption is that the embryo is a human being because it is both human and alive. No one would deny these two major descriptors of the embryo but putting them together in that way becomes an assumption requiring a specific definition of human life. To be consistent, those who favor expansion of the research options would likely not call the embryo a human being, but that does not mean they lack respect for human life. With regard to the West, it means recognizing the influence of both the Hebrews and Greeks on Western history up to the Enlightenment and into the modern era. During my interview with Cameron, he indicated that the Enlightenment is the ever present backdrop of our society, influencing how we think and how we act. This is a good thing, in his view, but needs to be more clearly recognized.

But there is more. Dialogic relations imply a deep human relationship, one that starts with recognition of a need for commonality in communication. This is exactly what we need to resolve this conflict. Many of those interviewed, while emphasizing the

[83] Martin Buber and R. Gregory Smith, *Between Man and Man* (London: Routledge, 2002), 22.

need for deeper communications, supported the concept of relationships as well. They recognized that deep communications cannot occur without knowing the person--not just the public person but the private person as well. Though the interviews for this project where short, semi-structured, idea oriented, and not intended to be probing in any way, there were occasions when an expert revealed a private piece of relevant information, such as having a family member with a debilitating disease that could someday be cured through stem cell research. This might be important to know, not in order to assign some type of selfish motive to the other's position, but to start to build a more sensitive relationship with the other.

A shared vision will help those in conflict see farther into the future where a simpler agreement may be possible. This mutually crafted vision might be something like, *a future where the major debilitating diseases can be cured or prevented and these therapies are made available to everyone, regardless of social standing*. This vision may be difficult to arrive at, but something like this could lead to agreement on the most important issues. The process of vision-crafting can expose motives and assumptions. Suppose someone cannot agree that curing the major debilitating diseases is a good thing; then they probably cannot be part of the conversation. Suppose someone cannot agree that social justice should be the goal; they may need to be excluded as well.

This kind of vision looks far into the future, so different paths can converge on a common objective. Short term vision, like wining a significant grant from the NIH to keep a research project afloat or, conversely, stopping a state from using taxpayers' money to develop new hESC lines, would be exposed as being parochial. However,

these goals may actually be on the path toward a common vision, but they would need to be discussed transparently, prompting the proponents to recognize any selfish or inconsistent motives. Divergent paths should prompt the two sides to reconsider—can the proponents envision a way these paths could be brought back toward the target vision? Where there are true disagreements on a vision, there will probably be little chance of resolving the conflict. But where there are disagreements on the path to be taken toward a common vision, there can still be significant hope for harmony.

With a common language, common communications contexts, and a common vision, then dialogic relationships can emerge. But communicating the truth is another critical aspect of constructive ways and pushing on to deeper relationships that needs to be promoted continuously and extensively. There must be truth in all thinking and communications. It is true that opponents cannot always agree on the facts, but in this kind of scientific conflict, many of the basic facts should enjoy wide agreement. Where there is disagreement, more research may be needed, and those areas need to be supported with public funding and pursued within the established umbrella of scientific ethics.

There are other truths, not in the category of established objective facts, that may not be so easily monitored, but at the same time those truths might be more important. The ability to measure cannot be the sole criteria for selection of a suite of fundamental truths. Results that are difficult to measure may be just the ones we are seeking. For example, among the most important scientific truths to be considered would be identifying therapies that can result from the research. Since these are in the future, and

we cannot know what therapies may result until we have done the very work that is central to the conflict at hand, how can we know these kinds of truths? There have to be better ways of predicting the potential results that do not rely on unsupportable claims and publicly acclaimed sound bites. For example, in the run-up to the last general election there were many unsupportable claims, not so much about what could someday become a reality, but rather that extraordinary results could be obtained in a very short time given enough resources and the right kind of research materials. Before Congress, Christopher Reeve implied that the lack of public spending on stem cells was preventing him from walking.[84] In California, Michael J. Fox claimed that the Bush administration was holding back those working for a cure for his Parkinson's disease. There were also heart-rending advertisements claiming that Proposition 71 could be the cure for a real child's leukemia in short order.[85] These could be qualitatively true, but it is doubtful that it can actually be objectively established that these claims have significant scientific merit.

There are also religious truths that should be monitored. For example, in my interviews it became clear that there is usually a religious basis for opposition to hESC research, but the faithful are worried that their views will not be persuasive in our predominately secular religious society. So in the public sphere, these advocates for a narrow moral standard recast their arguments as coming from higher moral standards than those held by many scientists, an approach that they think is more likely appeal to

[84] Christopher Reeve, *Nothing is Impossible: Reflections on a New Life* (New York: Random House, 2002).
[85] Healthvote.org has made a number of these advertisements available at Healthvote.org, "Stem Cell Research: AdWatch," California HealthCare Foundation, http://www.healthvote.org/index.php/adwatch/C28/ (accessed November 14, 2007).

the public in general.[86] Though there is a grain of truth in how these arguments are cast, they tend to raise the conflict level. The first step to good dialogic relationships would be transparency in motives.

To get at the truth, Sedgwick uses an idea of cognitive dissonance to challenge his seminarians to carry on a dialogue in a consistent and productive way that helps them get beyond their initial views and move on into a problem solving mode. He has used this technique in resolving the stem cell conflict in a small way within small groups of students. He starts with a basic education in the subject, ensuring that there is no confusion over the facts; then moves to an opportunity for participants to express their views on the social conflict; then challenges inconsistent ideas; and finally, proceeds to a deeper relationship type of dialogue. According to Sedgwick this technique has been effective among Episcopalian seminarians in resolving this and other conflicts related to science and religion. The objective is for the graduates to take the method into their future parishes to do the same thing within each congregation. Though this is a good technique, it is probably far easier to do in a classroom, among highly motivated students in a small group with a common belief system, in a denomination that is known for these types of intellectual approaches to problem solving than it would be to apply to a broader group of Americans. The challenge would be to carry this type of approach to Catholics and evangelical Protestants, as well as into the science classrooms.

[86] Doerflinger and Pacholczyk both insisted that their arguments were not religion-based, but were plain old-fashioned ethical arguments. Based on interviews with them, I find this claim to lack credibility and at the same time this approach negates the impact of facts that could be among their stronger arguments, such as the importance of religion in our society and that nearly 50% of the population is either Catholic or Evangelical Protestant.

As Zwanziger recommended during my interview, there are numerous precedents that should be brought into the debate, like the Nuremberg Code, the Belmont Report, and the Declaration of Helsinki. These documents provide sobering standards that must not be ignored and that might prevent us from repeating the disastrous mistakes of the past.

Finally, a necessary component of integrative solutions should be that the proposal has to be jointly acceptable. If the opponents do not agree that what might be a perfect solution from one perspective is in fact not a good solution from the opposite perspective, then it badly misses the mark. So, though there may be a great deal of commonality in language, communication efficacy, mutual respect, absolute truth in discussion and claims, in the end there need to be substantial results. There must be widespread agreement on the value of these results, and they must resonate with the hopes and concerns of the public. We are a secular religious society that believes in the freedom and value of religious practice along with the dual opposing concerns that religion will have too much influence on our society and at the same time not enough.

Taken from the categories of solutions that emphasized communications and integration, the following is a composite solution that, in my view, would go a long way toward resolving the conflict if there were enough resources devoted to it:

First, the solution suggested by Cameron is perhaps a necessary but not sufficient component. As Cameron has done, bringing people with diverse opinions together to work jointly on the issue is an accomplishment in itself, but there needs to be an additional effort to export this experience to a broader American audience. A depth of

communication among prominent people in the field of bioethics, while discussing the related ethical issues in a constructive way is valuable, Cameron's solution doesn't go far enough in my opinion. Though his group continues to publish the results of their efforts, only those with exceptional interest in the subject will likely investigate Cameron's web pages, publications, and open forums.

A second necessary step is to take these productive debates, such as those conducted by Cameron, to the American public. There are discussions in the university, but though these may be open to the public, there is little likelihood that they can reach beyond a small number of faculty, students, and alumni. Though the university context is a good place to reach those who already have a great deal of interest in the debates, other places are more accessible to the general public. Churches and synagogues would be excellent venues to make contact with the wider public. Most Americans identify with a specific place of worship and may be interested in these discussions if they are presented in an interesting and informative way, with significant time devoted to discussions. Of the traditional opponents of hESC research, Catholics and the evangelical Protestants, church attendance is a high priority. For Catholics, the church hierarchy may not endorse opposing views being presented in the church, but the leaders have little hope of winning the hearts and minds of their people if the religious and secular messages cannot be integrated. For evangelicals, the stem cell debate may be peripheral to their primary objectives, but again if the church leaders really believe that this is an issue for the church, then they ought to be willing to promote a productive dialogue.

A third front should be various public political gatherings, not party-specific events, but those places such as town hall meetings or focus groups where community leaders attempt to get in touch with the major concerns of their constituents. Politicians may be longing to find solutions to this conflict that would allow them to take the nation forward in a hopeful way that is consistent with the norms of society.

The final front would be located back at the university and research institutions but with a new approach. The current meetings where these discussions are central may not bring the religious view into the debate, a critical oversight.[87] This debate is not just about secular ethical norms; it is also about deeply held religious values, easily neglected by the university in a formal setting. Yet, many in the university maintain deeply-held religious beliefs that should be integrated into their values relative to the stem cell issue.

Summary of Positions and Proposals

For the data supporting these summaries, please see Appendices A through F, below. There were four major groups interviewed: clergy, theologians and ethics educators, lobbyists and public policy experts, and scientists. Almost everyone interviewed fits into more than one of the categories, and one most remarkable person, Father Austriaco, occupies at least three of the categories as a Dominican priest, a Ph.D. in biology from MIT, and a science and ethics professor at Providence College. In

[87] At the American University forum on ESC research on April 27, 2006, *Potential for Division,* Johnston pointed out to me that the panel included a scientist, a congressional staffer, a public health policy maker, and herself, an ethicist. She asked the rhetorical question, *why wasn't religion represented*?

general, those interviewed can be assigned to the major groups as follows, according to the reason for recruiting them for this project:

- Clergy: Benson, Cole-Turner, Kilner, Breitowitz, Helpern, Austriaco, and Pacholczyk.
- Theologian and ethics educators: May, LyGrys, Gomez-Lobo, Zoloth, Sedgwick, George, and Mitchell.
- Lobbyists and public policy experts: Jurith, Lewis, Doerflinger, Gadlin, Saunders, Comstock, Johnston, and Cameron.
- Scientists: Morowitz, Zwanziger, Prentice, Casper, Arneson, Horne, and Cole.

Appendix A is a complete interview record; Appendix B is a sample recruitment letter; Appendix C is the Informed Consent Form required and approved by George Mason University Human Research Subjects Board (HSRB); Appendix D are the HSRB approved sample questions; Appendix D includes the complete data in the order the interviews appear in the table of interview records (Appendix A); and Appendix F includes additional supported research efforts. Below, I include summaries of the expert-recommended solutions in the order shown above.

Clergy

Rev. John S. Benson. To study all aspects of human life is more than just acceptable; it is an obligation. Studying hESCs is the right thing to do and we should go forward with this type of research. But we have to be sensitive to the serious beliefs of many religious people, who find problems with how scientists intend to employ

embryonic stem cells. Letting them tell their story is the key to trust and respect and taking the time to allow them to tell this story repeatedly helps to build up trust. So we need to take time to do this right, but as with all of life there is a paradox. There is also urgency. Taking into account the natural flow of all of human life, this research will certainly benefit many individuals and society as a whole. We need to move forward with respect. The church would be a good place to carry on this discussion; resolving these kinds of issues is the mission of the church. An organization like the Templeton Foundation could bring people together from different traditions to study and help resolve this issue.

Rev. Dr. Ronald Cole-Turner. There is a middle way, but it will take new political ideas to get there. Some politicians, such as Senator Jim Talent (R-MO) and Senator Bill Frist (R-TN) are working on political solutions. We should prohibit only a few things like reproductive cloning, and restrict funding for practices that are highly offensive to a large proportion of the population. People should influence local decisions in their particular states and localities, through the political system, lobbying for their individual concerns, such as prohibiting or funding specific practices. Private funding should continue in the interim. While the current administration may not be unable to make changes to their policy for political reasons, the next administration should have more options and needs to work through the funding issues.

Rev. Dr. John F. Kilner. The objectives of hESC research need to be defined and honestly put before the public for discussion. To meet the objective of therapy, hASCs are already demonstrating good results in some areas. For the objective of research there

are potential ways of getting pluripotent stem cells without destroying embryos. The biopsy approach will soon be a reality and will meet with fewer objections than the current method that destroys embryos. There are some technical hurdles yet to be leaped and it remains a question if leaping the hurdles is a waste of time. In public discussion, we need to clip at the edges of the larger issues to ensure all concerns are addressed. We need to protect the vulnerable. But who are the vulnerable: the embryos, the hurting patients, the women who donate eggs? Addressing these issues honestly and openly can help build trust and achieve a solution to this issue of tremendous national interest.

Rabbi Dr. Jacob Helpern. The Torah has a lot to say about the importance of human life; we understand the prohibition against murder, but giving up one's own life is also prohibited except in certain circumstances that involve other lives or critical values, such as desecration. Your life does not belong to you. Because the Torah is not a science book, there is no conflict. The embryo is not the type of life that would fall under the strict value placed on life by the Torah.

Rabbi Dr. Yitzchak Breitowitz. There needs to be a good understanding of the truth of embryonic stem cell research. Life is so important that it is unacceptable to sacrifice one for the good of another or even one for the good of many others. So the question becomes: what is the status of the human embryo and what rights should this form of life have? The Jews distinguish between the embryo in fertility clinics and the implanted embryo. An open debate of the facts will help resolve the conflict. But the scientists must also be honest--although the research will someday produce great results, the need for embryonic stem cells may be overstated. Alternate sources of high plasticity

stem cells may be a partial solution and adult stem cells themselves have not been fully exploited. In addition there is something to be said for the other major positions on the issue: the Catholic concerns for the weakening of the moral fiber of society and the evangelical point that tax dollars should not be spent on something that so many find to be morally unacceptable. Allowing state and private funding, along with limited federal funding is okay, but there also needs to be government oversight of the research.

Rev. Dr. Nicanor Austriaco. While some scientists believe they should move forward unimpeded with hESC research, they do not have the right to self regulate as long as they accept public money for this activity. The public has the right to debate this issue on moral grounds and the public should control how public money is used in research. There is a third way: a technical solution that provides pluripotent stem cells not derived from human embryos. If altered nuclear transfer technology works, most Catholics would not oppose that solution; and if the reprogramming technique works, it would be acceptable as well, with perhaps even fewer objections. Catholics are supporting the research efforts to discover a good source of human stem cell materials that would fully satisfy the scientific community. Even these solutions require a commitment to a strict code of ethics because it is not a trivial matter to obtain donor eggs to be used in these processes.

Rev. Dr. Tadeusz Pacholoczyk. Everyone needs to understand the science better. The real cures and the real potential will be found in hASC sources. Even the needed pluripotent stem cells may come from hASCs as in the recent work in Germany with

testicular extracts and genetic reprogramming techniques. Education is necessary because even the medical community has lost track of the truth about ASC therapies.

Discussion of the Solutions Recommended by the Clergy

Although the Bible does not provide the answers directly, it does help us understand the importance of life, and there is a sense that we are obligated to work to learn and understand the meaning of human life. There is no indication in the Bible that the embryo would qualify as a human life reaching a level that is deserving of the right to be protected. Yet anyone who believes that the Bible reveals God's character would likely be very reflective and cautious about exploiting any form of life including the human embryo. Catholics naturally put a high priority on human life but primarily derive their view of the meaning and definitions of early human life from the church's interpretation, one that declares the human embryo to be a life to be protected.

The Protestant and Jewish clergy believe strongly that all sides should be allowed to tell their story. Though none of them would necessarily embrace the Catholic view completely, they believe that the Catholic view serves an important role in our society, keeping the rest of us honest in assessing and expressing our own beliefs. Though Catholic clergy tended to be more knowledgeable about the science,[88] in my view, they did not give much consideration to opposing views. In a different context they may be more open to other views, but when looking for a solution to this conflict, listening to others was not among the important steps they would single out.

[88] Both priests, Austriaco and Pacholoczyk have impressive academic credentials with earned doctorates in Biology as well as their Catholic ordinations.

The primary Catholic solution is to use hASCs to develop therapy and non-human embryonic stem cells for basic research. The secondary solution is to find another source, the equivalent of embryonic stem cells that would not involve actually destroying living embryos.[89] Austriaco told me that he had been tasked by the USCCB to examine the alternate technical solutions on the basis of science and ethics. When I spoke with him, he expressed various ethical concerns with some of the alternatives; he personally favored *reprogramming*, as a potential method of obtaining embryonic stem cells by fusing cheek scrapings and embryonic cells, and a process not involving fertilized eggs. The other clergy I interviewed would welcome any of these approaches as well, but were more open to using human embryonic stem cells for basic and applied research. These Protestant and Jewish views ranged from: believing we have an obligation mandated by God to study the embryo, to a desire to avoid it if at all possible. But they all expressed some level of acceptance as long as all other ethical issues, such as donor rights, had been considered.

The best solution to come out of this group is the recommendation that these issues be discussed openly in the churches and synagogues, taking the time to hear all views, and letting the congregations and visitors come to their own conclusions. This would then translate into public policy, as people vote and influence their elected officials. Based on my observations, this approach would not work in the Catholic churches or in some of the more conservative Protestant churches, where the open

[89] Austriaco made a presentation at the USCOCB meeting that I attended, attempting to demonstrate an ethical reason to protect the embryo that would be independent of the church position. Pacholoczyk told me that he never refers to God in his presentations; the basis is strictly a morally derived position. These claims: that their positions are not church-based seemed to lack credibility, though they both have put forth credible cases on the basis of ethics and morality.

discussion would be hindered by the presence of church officials. However there is no reason that Catholics could not participate in these kinds of activities outside of their own facilities. Both Benson[90] and Breitowitz[91] have tried similar approaches of encouraging dialogue on the hESC research issue with notable success in their respective congregations.

Theologians and Ethics Educators

Dr. William E. May. May recommends the ANT-OAR process as a technical solution that circumvents the ethical issues involved with hESC research. This technique, if successful, would produce pluripotent stem cells that could never become an embryo under any circumstances, but would still provide valuable research materials. The ANT-OAR process involves somatic cell transfer (cloning), but unlike cloning techniques the process ensures that no human clone could be produced. The donor cell would be genetically altered so that half of the genes are turned off so that the hard shell of the blastocyst cannot form. The resulting fusion of the donor cell and the enucleated oocyte can only lead to stem cells that could never be implanted to grow a human being.

[90] I observed this successful effort in Benson's church, the Community Covenant Church, Springfield, Virginia on June 22, 2005, when University of Wisconsin biology professor, Steven S. Clark presented the stem cell story from Jamie Thompson's perspective, the Wisconsin professor who was the first scientist to isolate hESCs in the laboratory. After Clark's presentation there was a productive open discussion and it appeared that people changed their minds about the issue, becoming more understanding of the value of the research.

[91] Breitowitz is an orthodox rabbi and his congregation, the Woodside Synagogue of Silver Spring, Maryland expressed an interest in understanding the issue, so he posted a thoughtful position favoring ESC research on the synagogue website to allow discussion among the members of the congregation. This orthodox congregation appears to be open to ESC research while at the same time respecting the Catholics for their differing position.

Dr. James LeGrys. Catholics object not as they would to abortion, but as they would to intrauterine devices that prevent the implanting of the embryo in the womb. Though they object to the method, under certain circumstances they may accept any resulting benefits derived from hESC research. Catholics are proactive about promoting research using adult and umbilical cord stem cells. Using these sources, researchers are making daily progress toward cures of scores of diseases and injuries affecting children and adults. Though hESC research will most likely continue, public interest will wane as the results continue to be disappointing. Just as with the issues surrounding in vitro fertilization a decade earlier, Catholics are warning the public about the ethical issues surrounding hESC research. As with many things in life, the right will prevail in the end.

Dr. Alfonso Gomez-Lobo. The ability to conduct regenerative medicine is important but the conflict involves aspects of life and death, and therefore enters a moral realm in addition to a scientific realm. There is no middle ground between "okay" and "wrong" in this case. The in vitro fertilization technique has created a monster not imagined by the early moral scholars. It is critical to develop a technology acceptable to science and ethics. The solution is the ANT-OAR method proposed by William Hurlbut, a way to create embryonic stem cells that are preprogrammed without the set of genes necessary for the embryo to become a human being under any circumstances. This provides the stem cell material needed by science but presents no objections among ethicists, there is effectively no embryo killed when harvesting the materials needed to create new stem cell lines.

Dr. Laurie Zoloth. The nature of this conflict is driven by the understanding of the moral status of the source of hESCs and the process of how to get the research materials. Contributing factors include the aging of the population and need for justice in distribution of the resulting products and freedom to choose for the greater population. We have a duty to heal and the majority of Americans support hESC research. The 2006 election was a referendum on this issue in many local elections, such as in Illinois and Missouri. People interpret the scriptures differently, and people should not be expected to compromise on their beliefs. In other social issues of life, such as pacifism and the right to refuse medical treatment, society accepts the rights of the minority, but as with those examples, it would be contrary to the norms of our society to forgo campaigns that the majority of the people consider to be essential. Catholics and Evangelical Protestants have a right to object and make personal choices, but not to alter the chosen actions of the majority in our society.

Dr. Timothy Sedgwick. On a small scale conflict of this type can be resolved using techniques of cognitive dissonance. In ethics classes, groups of 4 or 5 can exchange ideas after they are taught a common basis to differentiate between fact and value. Participants can challenge potentially inconsistent thinking, such as a position that supports IVF but bans all hESC research. After sufficient discussions, the moderator asks two questions: (1) how did views change and why, and (2) what questions remain outstanding? This type of conflict resolution is focused on small groups and may need to be modified if it is to work as a broader global strategy. In fact, though people can discuss divisive issues respectfully, they may not change value-based positions.

Dr. Robert George. This conflict is a moral issue and depends on a person's worldview. Is the human embryo a nascent human being or do embryos become a human being at a later stage? Each of these worldviews is legitimate but the government cannot go forward with a program that half of the Americans object to on moral grounds. Alternative technical solutions as outlined in the PCOB *White Paper* would solve the problem. There would be pluripotent stem cells available for research and regenerative medicine while the half of the population that does not believe human embryos should be destroyed for research would not object. These sources would provide genetic matches for those needing the therapy promised by pluripotent stem cells.

Dr. C. Ben Mitchell. Charitable discourse is the solution, and people need to recognize that the various motives of those who want to use the embryos for research range from legitimate scientific curiosity to the drive to enjoy fame and fortune. There are a lot of things that society should do to limit the activities surrounding hESC research, while not outright banning the use of embryos in research. Those who are against the use of embryos in research (tantamount to killing them), can use public consciousness to define social norms supporting their point of view. How we describe people has an influence on societal opinion. If we were to use more widely acceptable sources of materials such as ANT-OAR and ACT techniques, it would save us from many of the ethical difficulties of the future.

Discussion of the Solutions Recommended by the Theologians and Ethics Educators

This group was sharply divided on the ethics of using the embryo for research. For those who are Catholics, there can be no compromising; the embryo is a form of human life that must be protected. Their solutions again favored the familiar *third way*, consisting of one or a combination of several technical solutions that would not involve destruction of the embryo. Opposing views emphasized social justice and favored using the embryo for research. Some were not very sympathetic with what they considered to be the minority view against hESC research and insisted that the majority position, that of favoring the research, should rightly prevail in the end. Others in this group, especially the Protestants, stated approaches that are more inclusive of both positions, ranging from moving forward but with extensive discussion to not moving forward fully with the research out of respect for the significantly large group that some believe to be as high as 50% of the population who have serious moral concerns about the embryo.

There was a sense among many of the non-Catholic members of this group that the hESC research conflict should be resolved in a public forum allowing localities to determine their own course while nationally encouraging debate and letting the results of the popular vote prevail. There was also a sense among several of the people in this group that the right will prevail in the end, but predictions of how it will end depends on what those interviewed believe to be right. Some believe that not much will come out of hESC research and that the emphasis will die away in time, while others predicted that local elections will favor hESC research and that those politicians who wisely choose to support hESC research will prevail in the next general election in 2008.

For the Protestants in this group there is a middle ground: while it would be impossible to actually write a law that prohibited hESC research that could not be enforced, we should not fully condone hESC research either, because there are too many people who are against it. For these kinds of moral issues, it might be useful to continually question the norms, maintaining a constant vigil against going too far in this type of research to prevent the researchers from becoming too comfortable, while preventing society from becoming too blasé about hESC research.

The best solution to come out of this group is one derived from a proposal outlined by Sedgwick.[92] His method of dealing with this and similar issues among his seminarians is a remarkable example of how to deal with high profile general social conflict. His method is to challenge small groups by (1) providing the scientific background information necessary for a good discussion, (2) stating the basic moral issues underlying the conflict, (3) challenging inconsistent positions held by the participants, and (3) assessing how views changed during the discussions and compiling a list of the remaining open questions. The way I would export his ideas into society is to use the same method in broader context taking the process to churches and synagogues, and private and public universities. If approached using Sedgwick's systematic method, serious participants would find there are no easy answers and the social conflict would be resolved in a reasonable way that would not polarize the population.

[92] When I asked Sedgwick if he thought this method would work outside of the seminary, he was not optimistic. He may be right that there is something about the Episcopalian culture that makes this method more effective. But I believe that the rest of the population is far more open minded than he suspects, though the people in some congregations may need to be separated from their clergy and other influential Christian leaders in order to proceed with uninhibited dialogue.

Lobbyists and Public Policy Experts

Edward H. Jurith, Esq. Elected officials and civil servants have a right to their religious beliefs but they should separate their beliefs from public policy decisions. There should be a consensus among the religious and scientific proponents and opponents. Because it is a hot button issue, there should be an independent think tank employed to study the conflict. It is important that the group coordinating the study be independent and not holding a religious or political view that would influence the project. The objective of the study should be to lay out the best and least controversial path to hESC research possible.

Kathy Lewis. Lewis believes that only a change of administration will solve this problem, and the direction our country is going, does not leave her with much hope that the next administration will be any better. Because the President brings his religious beliefs into the oval office, the administration is hostile to hESC research. Though they are irrational, we need to understand and respect this type of narrow start-of-life belief system. The issue is like abortion, where the administration has cut off Medicaid funding to the very people who need the abortions most. So a solution could only accompany a new president. She suggested I focus on those who object to hESC research to find out what they would be comfortable with for a solution, but she is not optimistic.

Richard M. Doerflinger. For Catholics, the purposeful destruction of human life is the issue. There is a *third way*, a method of using stem cells that no one would object to. The ultimate solution will be the use of umbilical cord blood and adult stem cells, because they will be the source of therapies that work. For those interested in cures,

enthusiasm for hESC research will quickly disintegrate as they realize no cures will be forthcoming. So that is how it will be resolved in the end. In the meantime, federal funding for hESC research should be restricted; Catholics accept that they live in a secular society, so research can go forward with private funding, but not tax dollars. Another solution is to compromise. Catholics, after registering their protest and continuing to oppose, would have to understand if some hESC research continues, but there should be assurances that there are limits to this kind of manipulation of human life. For example the ban on cloning should be codified more strongly in law; there should be strong ethical standards on the donation of materials; and creating embryos strictly for research would be going too far.

Dr. Howard Gadlin. Meaningful public discourse is necessary, but the quality of the conversation has to be raised significantly. It needs to become something different from a media event. High profile people can make that happen, as President Clinton did in dealing with race relations issues. In dealing with those who see this issue as a slippery slope leading to a bioethical disaster, listening is the key. They need to verbalize their concerns and they should not be dismissed without consideration.

Bill Saunders, Esq. The American people need to decide how to resolve this conflict and religion has a role to play. Too often, the religious are under attack, though they see themselves as only the messengers, preserving an sector of society with a more traditional ethical view—the conscience of the nation, so to speak. The issue could be resolved through a more extensive discussion especially at the state and local level, where this kind of public discourse can be pursued in a less biased way. The federal

government role will be decided in the next election. By continuing to keep the ethical issues in the forefront, the religious can help keep scientists from moving forward with self-serving solutions. Meanwhile, the whole conflict may dissolve as a more acceptable technical solution emerges, negating the need to destroy embryos in order to obtain pluripotent stem cells.

Amy L. Comstock, Esq. As people understand the science better and misinformation is removed, there will be more support for using hESCs in addressing these problems. The remedy requires less emphasis on the politics of the issue and more on the benefit to the living. To resolve this problem, there must be a focus on ethics and the steps in the process need to be linked. The first step is to make reproductive cloning illegal—it is feasible to separate reproductive cloning from medical research cloning. A necessary step to ensure there is a clear divide between the two cloning paths is to establish strong ethical guidelines. At the same time, the ethical guidelines need to address other hESC sources to widen the research effort. The NIH could bring science and bioethics together to create such guidelines that are not politically based.

Josephine Johnston, Esq. Her solution does not seek to cut off debate, but she is concerned about discord and political polarization. The continued public dialogue prevents this issue from turning into a negative conflict. Some of the norms of the discussion include: (1) being better informed, (2) focus on the truth, (3) understand the arguments of others, (4) recognize the logic of the other position, (5) do not expect people to give up their beliefs, (6) recognize that human psychology is an important factor, (7) realize that meaning of life issues are important to everyone, and (8) realize

that the scientific study of life is essential. The conflict will most likely play out in this way: as more people identify with health needs and as cures start to emerge, the political issues will fade. But that's not the end of the conflict; other ethical issues will emerge, such as the rights of women, who are potential egg donors.

Dr. Nigel Cameron. The solution is to bring a diverse group of people together to discuss the conflict in a serious and open minded dialogue. Thoughtful people, who at least understand each other, can listen to and appreciate opposing views. The participants will not only have differing views, but they will also come from different disciplines so they will approach the conflict in a variety of ways. The hESC research conflict is not about abortion, and if people treat it as just another front in the abortion conflict, they will not get anywhere in their discussion. The expert participants need to bring the dialogue to the American people, in a verity of forums, such as focus groups, town hall meetings, panel discussions, and open communications, such as web sites and email newsletters. The idea is to emphasize free speech and free association in ways that open up the discussion in constructive ways.

Discussion of the Solutions Recommended by the Public Policy Experts

Within this group are those who have a religious basis for their position on hESC research: many would rather see an environment where destroying the embryo can be avoided, but they have some understanding of the other position and are realistic about the general trend in society in favor of hESC research. Others involved in public policy processes favor a more liberal approach to hESC research, but they also understand the

other position and are realistic about the need to show some restraint with the kinds of research that will be allowed. Others were neutral on the issue. They understand both views and believe there should be more concern about an expanded list of ethical issues related to hESC research. The people in this group favor more discussion over the conflict and each of them suggested ways of adding more structure to the public discourse.

There is subtle area of disagreement among these participants over the role of religion in this conflict. Some expressed strongly that bringing religion into public policy decisions is inappropriate. Among the others, some have the opposite view: (1) religion should play a role in helping scientists to remain on high moral ground and (2) a healthy dialogue should include religion. Curiously, some believe that religion is not central to the issue and the conflict should be argued strictly on moral grounds. Others encourage more open discussion but are neither for nor against religion as a particularly influential contributor or a solution to the conflict. For them, the conflict primarily occupies a political sphere.

While the abortion issue perhaps needs to be avoided, several people in this group would like to see other related ethical issues brought into the discussion. The most notable side issue that needs to be included in the dialogue is the ethics of human egg donation; how do we ensure informed consent, should we compensate donors, how do we handle the discomfort and risks, how do we ensure justice for donors and recipients, how do we ensure racial equality, will there be enough human eggs available as we transition from research to therapy?

The best solution to come out of this group is the idea of structured discussions involving people representing all stakeholders along the lines of recommendations proposed by Johnston and Cameron. Both of them have used these very methods in their organization to work on this and other bioethical conflicts. Part of the problem is to transport the benefits of these kinds of solutions beyond the experts and to the general public. If significant funding were to become available from the NIH or from a private foundation, these kinds of discussions could be conducted across the nation, and the conflict could be resolved while avoiding the kind of polarization that has occurred with reproductive choice and other life issues, as well as creation and evolution disagreements.

Scientists

Dr. Harold Morowitz. There is urgency in this issue; lives are at stake and research money is slipping away. In any medical advance there will be risks, but we should be willing to accept the risk to reap the benefit. We must move forward with strong ethical standards in place, trusting the institutions to abide by the rules that society sets up. Those who do not believe in doing the research should opt out themselves and not interfere with others who believe in doing it. There is room for both views in our society, and any personal decision people make at the front end of life does not have to lock them into another decision at the back end of life; all should be free to benefit.

Dr. Lee Zwanziger. A good public policy solution must be crafted in the context of precedent in scientific research and ethical documentation. There is a lot of precedent and a lot of thought taking place on this issue, but the key problem is in definition. One

of the key questions is still the definition of death, and one that needs to be answered in this case—does the harvesting of embryonic stem cells involve the death of a human life? We need time to discuss these issues. Public policy crafting takes time, but will ultimately produce a good solution. The Bush compromise was a policy statement supported by the government's source of power, the commerce clause, which at least bought time to work out a better solution.

Dr. David A. Prentice. If we look down the path of the future it is possible for all sides to visualize the same objectives out there. If the goal is therapy, then adult stem cells are even now showing more promise. If the goal is basic science, than alternate sources of pluripotent stem cells can do the job. When we lose sight of the main goals, society stalls out in solving the problem. It is proper to weigh the moral principals while asking why public resources should be devoted to this type of research. There is room for compromise but there will always be a few who are unhappy with the results. There are several changes possible in the political sphere, such as pending legislation and the likelihood that the next administration will modify the current policy.

Dr. Robert Casper. By using hematopoietic techniques, CART has cured childhood leukemia in at least five cases to date. By concentrating and growing stem cells from well-matched umbilical cord blood, they have been able to transplant these cells successfully in lieu of bone marrow transplants. Among the clear advantages of this approach is the lack of any kind of impact on the donor. It also involves less intrusive means of accomplishing the transplant, a simple injection of the stem cells. CART is continuing to research other applications and is on the verge of announcing another type

of cancer cure using cord blood stem cells. These types of advances will obviate the need for hESCs. At the same time, there should be no objection to using unneeded embryos in developing hESC lines to support researchers' needs. We do need to learn more, but to meet the objectives of truly helping people, cord blood is the answer.

Dr. Lynn Arneson. All sources of stem cells should be used in research because of the tremendous potential for human cures. Some research will not demonstrate immediate pay off in the form of therapies, such as the example of the once hopeful gene therapy idea, but there is still much to be learned from the basic research and studying all of the possibilities. So far hASCs have provided real cures, and there is some potential to derive multipotency from some hASCs, so maybe hESCs will not be as useful as some hope. We cannot know that until we do the research. Government funding should be provided to broaden the sources of stem cells, but regulations should accompany the funding. Somehow, there has to be a way to ensure that embryos are treated with respect and dignity, but to grant embryos "human rights" is going too far. The question of human life has to be linked with a living mother, not just the donors.

Dr. McDonald Horne. Education would solve the problem for a lot of people. Because these issues involve life and death concepts, people are unable to face up to the facts; science education would help, but there are some who are unwilling to learn. In addition, if people understood better the amazing potential of hESC research they would not want us to pass up this opportunity. There should be more support from NIH in the form of grants, while establishing firm controls that anticipate possible problems of abuse. There is always a potential for abuse, so everything should be out in the open.

The press keeps people honest, and Congress will step in when an agency or institution does not comply with strong ethical standards. The slippery slope is not inevitable; in an open society there will always be corrections in place.

Dr. Laura Cole. The NIH is encouraging multiple types of stem cell research while complying with the President's policy on hESC research. Making hESCs more available and less costly will help those who want to do the research. There are many new possibilities for cures emerging from research supported by public and private funds. The NIH funds adult stem cell research and hESC research from stem cell lines created prior to August 1, 2001. Some state-sponsored stem cell research programs, such as Proposition 71 programs in California, have fewer restrictions. In addition, some privately funded research activities, such as the work done at Geron Corporation, have even less restrictions. Education, such as the information provided on the NIH stem cell web site at http://stemcells.nih.gov/ will help the public to understand the issues better.

Discussion of the Solutions Recommended by the Scientists

The scientists, as a group, tend to be forward looking. In most cases, they metaphorically point to an optimistic future. They tended to see miracle-like outcomes with cures for many diseases and a general improvement in the quality of human life. These kinds of optimistic worldviews are not unreasonable; regardless of the path taken, we can be sure that great advancements in health will result. How we get there and the specific solutions are still unknown, but the scientists would like to see society get there quickly and efficiently, with more public support for all types of stem cell research.

Everyone agrees that there needs to some type of public control over this and any other publicly funded research. According to the recommendations, there are a variety of ways to apply this control, such as scientist self-regulation, peer review, or if necessary strict Government control over the research, based on worldwide ethical precedents. Regardless of the specific processes used, greater transparency and the free press are necessary elements that will prevent the science from slipping down a path of which our society would disapprove.

The best solution to emerge from my interviews of these scientists is the composite idea of focusing on an optimistic future, while remaining ever mindful of the mistakes of the past. This vision includes establishing ethical standards that align with new directions in science, taking the time to do things right, while moving forward deliberately toward a shared vision, and making more resources available for all types of stem cell research. Right now, we are operating under a compromise in government policy that has bought us time, but at the same time does not recognize the urgency of this remarkable opportunity. Caution and urgency are imperatives that need to be balanced, but if we are careful to do this right, the science will reveal the direction we need to go to get the most benefit from legitimate, ethical, and respectful research.

Overall, these 29 interviews, though not necessarily a proportional representation of the different approaches to the hESC research conflict, do represent a good cross section of the expert views on the issue in the United States. The scientists generally favor more hESC research. The Roman Catholic leadership will continue to be against hESC research as practiced today, and will favor hASC applications and third way

solutions. The Jewish view will likely emphasize the gift of life at the beginning and the end of the process and the need for social justice. It would be impossible to identify all of the many official and unofficial protestant positions on the subject, but the Protestants would probably be split fairly evenly in the two major views, some in favor of hESC research for social justice reasons, and the others against hESC research for beginning-of-life ethical reasons. They would probably not be as neatly divided as some might think into two groups, the evangelicals in one camp and mainline denominations in the other. The laity among all denominations will hold a variety of views, not necessarily fully aligned with their leadership, but influenced strongly by the needs and concerns of their loved ones. The public policy experts will line up more with their constituents, but will honestly seek good public policy solutions. As public discourse increases, the lines of separation between the two views will become less discrete. The intention of these interviews was not to identify all of the religious nuances and scientific issues of the conflict, but rather to identify a wide spectrum of good solution ideas. These interviews meet that objective.

Chapter 8

Recommendations

Methodology as a Solution

The solution cannot be to leave the embryo untouched and unstudied. It is true that there are some types of research that should not be done, regardless of the payoff, because the sources and methods are unethical. Though most people would recognize clear atrocities, as have so often occurred even in our own country, we have gone beyond restricting just those types of extreme abuses; more subtle areas involving far less psychological and physical damage are prohibited by our society as well. It would be unacceptable in a medical or research context to sacrifice even one human being for the benefit of millions of others, even if the person was fully willing to make the sacrifice. We cannot relax democratic and other western concepts of justice and ethics in any way. Society should be especially vigilant in all beginning and ending of life issues. In this case, it is not clear that all approaches to hESC research violate the commonly accepted norms of society. In my view, it would be both unrealistic and unjust to impose an outright ban on hESC research.

In my view, the solution also cannot be to allow unfettered hESC research, if for no other reason, than it does respond to questions about the development of human life, and because of the sensitivities of a large number of outwardly religious people. About

one fourth of our society is Roman Catholic and about another fourth is evangelical or conservative Protestant.[93] Among these two groups, those against hESC research may not even enjoy a majority, but most are intensely concerned about beginning-of-life issues in general, and hESC research is certainly in that category. Science, no matter what the potential payoff, cannot move forward unrestricted in sources, methods, and funding.

The solution cannot be a compromise such as we have currently, where federal funding is available only for certain hESC lines created before a certain date. Almost no one will be happy with this type of approach, because it allows a practice that is morally wrong for some people, but restricts funding in much needed research of interest to others. Such "lose-lose" compromises are distasteful to everyone. They lack the efficiency of a free market, unjustly disadvantage some people, are morally unsupportable, require a leap in logic, and are often short lived. There is always a reason to craft a new compromise--they are never perfect.

A workable alternative may end up being one of the technical solutions that could potential cause the social problem to go away by providing the research materials needed without violating well-established core ethical beliefs. In the dual concern model, these kinds of solutions certainly have the characteristics of a true problem solving outcome, and these solutions seemingly derive from a deep concern for the interests of both self

[93] The Pew Forum on Religion & Public Life, "Many Americans Uneasy with Mix of Religion and Politics," August 24, 2006, found that 23% of Americans are Roman Catholic and 24% are Protestant Evangelical. When asked if they would describe themselves as "born-again" or evangelical Christian, 38% of all Americans, some protestant and some Roman Catholic, answer in the affirmative. The Pew Forum on Religion & Public Life, "Bioethics," The Pew Research Center, The Pew Research Center, http://pewforum.org/bioethics/ (accessed November 14, 2007).

and others. But technical solutions may not materialize or may present other residual problems. It would be fortuitous if science could make the conflict go away, but for now, I believe we have to address the conflict more as a social problem; it is an opportunity to resolve a significant religion and science problem using a method that could have broader applications in society. A satisfactory solution requires a partnership approach, not a one-sided idea of how society should believe and behave.

There may be a broad spectrum of solutions that would not involve an outright ban or unfettered research. These solutions would not have to be compromises or a "third way" form of conflict resolution. Circumvention is not the only way to resolve this conflict. None of the ideas below can be presented in isolation; all the methodology described above must be employed to identify the better solutions and to work them into our society in a way that does not add to the conflict. The solution crafters should neither push the ideas too hard nor be overly sensitive to their detractors. Since there are so many good solutions available, there is no need to use a heavy handed political approach. At the same time, it is important to realize that there will be something to criticize about every solution.

I propose that the hESC research conflict should be discussed in a systematic way in churches, synagogues, or universities that are open to this approach to problem solving. The method to be used would be to challenge small groups by (1) providing the scientific background information necessary for a good discussion, (2) stating the basic moral issues underlying the conflict, (3) challenging inconsistent positions held by the participants, and (3) assessing how views changed during the discussions and

compiling a list of the remaining open questions. The norms established for the discussion would include: (1) being better informed; (2) focusing on the truth; (3) understanding the arguments of others; (4) recognizing the logic of the other position; (5) not expecting people to give up their beliefs; (6) recognizing that human psychology is an important factor; (7) realizing that meaning-of-life issues are important to everyone; (8) acknowledging that the scientific study of life is essential; (9) working on a common understanding of the language, such as the definition of human life; and (10) turning the group away from discussing related but polarizing conflicts like abortion, right-to-die, and evolution.

Expectations

The above recommendations sound more like methods to get to a solution than actual solutions. That is partly true, but nearly everyone I encountered in the literature and in interviews expressed a need for more public discourse. If we do that right, there will be good solutions that emerge, not negotiated compromises, but dynamic bridging solutions. Here are some more specific possible candidate solutions. None of them should be applied in isolation; there will have to be restrictions and combinations of solutions to make any of them work.

- Establish a national vision focusing on our best imaginable future.
- Allow local norms to determine the extent of hESC research to be conducted.
- Encourage stem cell researchers to present good solutions in their proposals, with only a minimum of preset restrictions on what can be funded.

- Set aside up to 10% of all research funding for ethical research and conflict management, such as the precedent established by the he Ethical, Legal and Social Implications (ELSI) Research Program under the NIH National Human Genome Research Institute.[94]
- As in the human genome study, overwhelm the private competition through adequate funding, creative research, and data systematic handling efforts; as well as flooding the market with free information.[95]
- Establish clear embryo and egg donation standards to allow donors to have a stake in the advancement of the science.
- Prohibit human reproductive cloning.
- Broaden the competition associated with publicly funded research by reducing the potential for unreasonably high profits associated with exclusive patents.
- Require complete transparency in all research, whether publicly or privately funded, with appropriate safeguards for proprietary information.
- Establish an independent oversight agency, separate from NIH administration, to study bioethical issues and investigate abuses.
- Encourage continued dialogue through nationally sponsored bioethics summits.

[94] The web page human genome web page includes a description of the ELSI and the funding opportunities available to ethics researchers. Gnome.gov, "All About the Human Genome Project (HGP)," National Human Genome Institute, National Institutes of Health, http://www.genome.gov/ (accessed November 14, 2007).

[95] This approach was outlined by Francis Collins in a presentation at George Mason University on October 18, 2006, for his book signing of Francis S. Collins, *The Language of God: a Scientist Presents Evidence for Belief* (New York: Free Press, 2006).

- Expand funding for all types of stem cell research with a focus on curing specific diseases through the most promising means.
- Include research scientists and religious leaders in the national debate; neither of these groups is untouchable while neither has all the answers.
- Form partnerships with other nations that have demonstrated ethical human research standards, including at a minimum: Canada, Australia, UK, France, Italy, and Germany.
- Inspire the nation at the presidential level to great achievements, avoiding the negative rhetoric that undermines such a visionary effort.

Policy Guide

Further driving conflict resolution principles while deriving additional applications out of my recommendations, I also propose a policy guide for decision makers. This guide could be used by congressional staff members, special interest groups, religious bodies, research organizations, ethical think tanks, university departments, conflict facilitators, and any other type of organization interested in resolving the conflict. I designed these checklist questions to promote the same principles that my assessment criteria were designed to measure: efficacy, inclusiveness, expansiveness, rationality, endurance, continuity, and hopefulness. These principles should become the minimum standard for organizations trying to study the issue, resolve the conflict, or even attempting to promote their own agenda in a healthy problem solving style.

Table 8.1 Policy Guide for Decision Makers

1. Does your organization:

   Understand the science?
   Understand the religious objections?
   Agree on key definitions?
   Recognize human needs?
   Recognize the principal issues involved?
   Understand the concerns of your constituency?
   Avoid extreme positions or narrow solutions?
   Go beyond using sound bites that lack substance?
   Avoid fear and greed?

2. Do your processes:

   Increase knowledge?
   Search for commonality?
   Demonstrate consistency?
   Promote transparency?
   Broaden the ethical considerations?
   Focus on long term solutions?

3. Do your solutions:

   Connect religion and science?
   Demonstrate compassion?
   Focus on objectivity?
   Judge each project on its own merit?
   Increase support to science?
   Expand religious freedom?
   Expand social justice?

Summary

The conflict seems to be unsolvable because of the high stakes and the sharply differing opinions, but during my analysis, I found a vast spectrum of possible solutions. Each solution has some advantages and disadvantages, and none will fully satisfy all concerns. The figure below summarizes the character of the conflict.

The human embryonic stem cell (hESC) research conflict involves high stakes.	There are many possible solutions and methods.
☐ If the embryo is a human being, it would be wrong to destroy it for research. ☐ If the embryo is the only source of stem cells that can cure debilitating disease, it would be wrong, not to conduct hESC research. ☐ Should we put more emphasis on emerging human life or on aging human life?	☐ Each has advantages and disadvantages. ☐ Most objective solutions favor one side or the other. ☐ Technological solutions are especially interesting to the public, but may not resolve the conflict.

Figure 8.1 The Character of the Conflict

The figure below summarizes my application of the selected conflict theories. The Two Cultures Theory and Barbour's Religion and Science Framework are strong tools for the analysis of the hESC research conflict, while the Dual Concern Model and the Communicative Actions Model are stronger tools in crafting resolutions. By working

in the communications space outlined by Habermas, resolvers will be able to craft many additional new solutions.

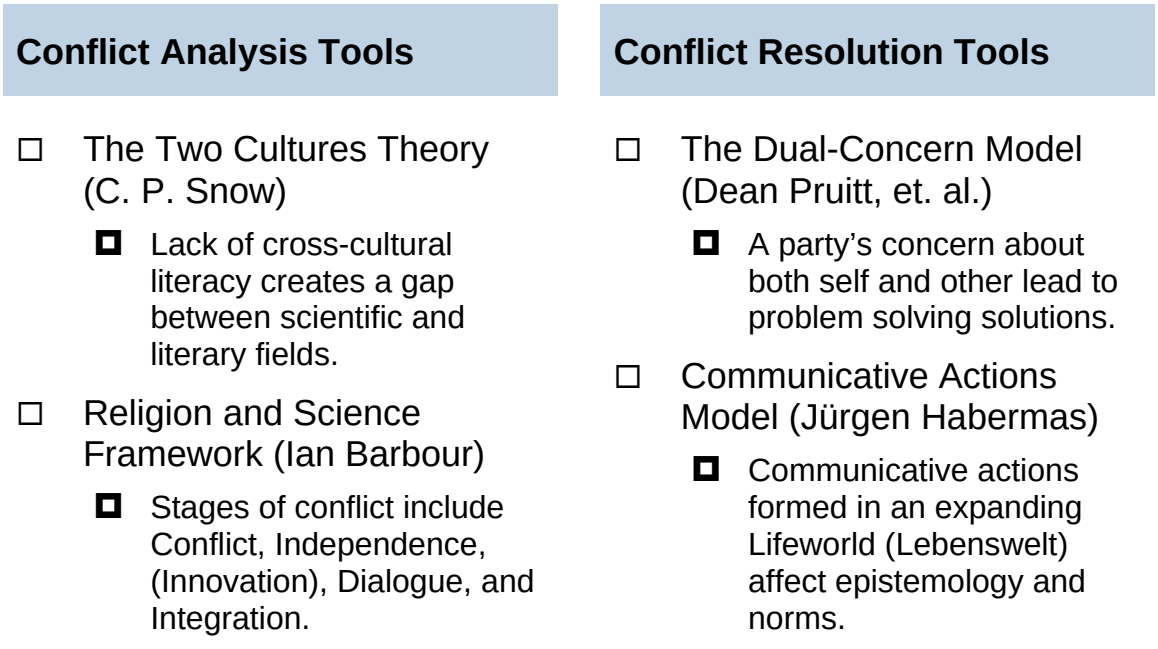


Figure 8.2 Summary of the Applicable Conflict Theories

My groupings as in the figures below helped to compile the best recommendations from each group, the clergy, the theologians, the public policy group, and the educators. There is remarkable similarity in the recommendations of the first three groups, agreeing on the need for further dialogue, and a great deal of strength in the recommendations of the scientist group, a repositioning of the stance people take toward the conflict.

The clergy group	The theologian group
☐ The conflict should be discussed in churches and synagogues. ☐ Solutions will emerge that will translate into public policy.	☐ The conflict should be discussed in a university setting. ☐ Leaders should guide participants to think more expansively.

Figure 8.3 The Clergy Group and the Theologian Group

The public policy group	The scientist group
☐ Develop structured discussions involving people representing all stakeholders. ☐ Highly charged issues, like abortion, should be excluded from the discussion.	☐ Focus on an optimistic future, and move forward toward a shared vision. ☐ The vision includes establishing ethical standards that align with new directions in science.

Figure 8.4The Public Policy Group and the Scientist Group

These group recommendations led me to create the Shared Vision Model, one that helps guide the way in this conflict, and perhaps has applications in other religion and science conflicts, as well. The illustration below summarizes the best of the recommended solutions.

Apply the Shared Vision Model

- Conduct dialogues in churches, synagogues, and universities.
  - Public policy should be crafted with the input of small groups.
  - The discussions must include both religion and science.
  - The focus should be on a common vision.
- This approach should yield new norms, new respect for science and religion, and a consensus

Focus on Federal Government Solutions

- The federal budget should be increased for all types of stem cell research.
  - Each proposal should be judged on its own merit to include ethical considerations.
  - Up to 10% of the budget should be set aside for ethics and values research and outreach.
- This approach should yield new knowledge, and new respect for emerging and aging human life.

Figure 8.5 Recommended Solutions

Additional Conclusions

When I started this project, I considered myself to be neutral on the hESC research conflict--I still do. Both sides of the conflict have well conceived and valid value-based positions. Neutrality paid off for me when conducting the interviews, much like a good reporter who skillfully pulls out of interviews the truest and fairest self-representation of the subject's position on the issue. My method was to get right to the point in each 30 minute interview to explore the best solution ideas each expert had to offer. Many times, their first recommendations were variations on an idea I had heard before, so I pushed for more details to get a sense of how the person believed his or her chosen solution would work. Using that technique, each person expanded their recommended solutions, which ended up being unique in some sense. I enjoyed every interview, and most of the people I spoke with seemed to enjoy the interaction, as well. For most people, it is enjoyable to talk about ideas, especially when they are given a fair hearing by someone who understands what they are saying. I suppose I would still be doing interviews if my Committee Chair had not told me to stop; in his view, I had enough data. In each case I formally thanked each volunteer, and wrote up the most accurate summary of their positions that I could. In those cases where people asked to see these summaries, they approved them as written. Everybody promptly signed my informed consent form, and all were quite frank about their ideas and seemed confident that I would properly represent their positions.

Because this conflict hinges on the definition of a human life, there can be no compromises. If human life begins at conception and that life deserves certain human

rights and protection by society, then hESC research is wrong. But if human life begins at some other time in human development and the embryo is deserving of some level of care, not rising to a level of a right to protection under all circumstances, then not conducting hESC research is wrong. Those who hold the first view of human life may conclude that my approach is no longer neutral because I propose a solution that would allow some form of hESC research. But even many of those who strongly oppose hESC research recognize that it does not reach the level of human rights abuse, and that a concerted effort to conduct hESC research must be made in a free society. Fortunately, the Roman Catholic Church has also concluded that Catholics can benefit from the results even though they oppose the concept of deliberately creating or destroying human embryos in the first place.

A good analogy would be the reality of one of many strong ethically-based beliefs such as pacifism that our society has to grapple with continuously. For example, I believe we are fortunate in a free society to have devout pacifists in our midst, but I would argue that we are also fortunate that they do not fully get their way, since we are immersed in a world full of good and evil.[96] At the same time there are those who believe being a warrior is their God-given calling and therefore the right thing for them to do. We are lucky to have them as well, but also fortunate that they remain under civilian control and subject to the rules of combat, court martial, and removal from duty by the

[96] Viktor Frankl believed that there were those who were good and evil in every group—he observed concentration camp guards who behaved in surprisingly good ways, while some of his fellow inmates were unnecessarily cruel. Viktor E. Frankl, Man's Search for Meaning; an Introduction to Logotherapy (Boston: Beacon Press, 1963).
In my view it is impossible to judge a person by what group they happen to be identified with—you have to know the person.

President. Though it has become a cliché in our society, it is nevertheless true that the pacifists benefit from the freedom that the warriors have helped secure, while those whose profession is fighting benefit from the moral presence of the pacifists, just like Catholics who may benefit from hESC research...[97]

On the issue of hESC research, I believe the nation should commit itself to greatly expanded effort to study as many different aspects of stem cells as possible. There should be a commitment to creating new embryonic stem cell lines using donated embryos from IVF clinics. At the same time we need additional efforts applied to regulating all forms of human stem cell research. This could start now, simultaneously implementing my primary recommendation to greatly expand the national dialogue on the ethics of the conflict, while ensuring that religious and scientific views are given an equal opportunity to make their points. It is simply wrong to claim that religion has no place in public policy decisions. As the nation sorts through all aspects of the conflict, we may find a need to impose further limits on the research—there is no slippery slope and there is nothing to prevent us from backing off on specific kinds of research, if necessary. Expanding the dialogue and the research at the same time will address the paradox of the simultaneous need for more discussion and the urgency of the search for cures.

[97] In 1973 there was a peace demonstration at Strategic Air Command Headquarters. Air Force security police announced to the protestors that if they crossed a certain line they would be arrested for trespassing. The protestors naturally crossed the line but then surprised everyone by kneeling on the ground to pray. Some of the airmen who were assigned to drag the protestors away were friends of mine, and they would have been praying silently for strength and guidance at precisely the same time. Both sides were praying to the same God, were equally sincere, and in my opinion, were both ethical in their actions.

As we move forward, we need to be clear in our thinking about ethical issues. While the formal Catholic position may be consistent about a variety of reproductive issues, opposing both IVF reproduction processes and embryo destruction initiatives, some, Protestants sometimes hold inconsistent positions of favoring IVF technology for reproduction, giving indirect support to the eventual destruction of unused embryos, but opposing the idea of using the same embryos for research. On the other side, a common inconsistent argument is to express concern about the urgency of finding cures for debilitating diseases while at the same time worrying that other nations will get ahead of us with the research. If other countries find the cures first, that would be a good thing if we are indeed looking for quick results. Challenging these surface-level inconsistencies will likely push people to deeper and more valid arguments. For example, there may be a way to eliminate excess embryos in the IVF process, and there may be a need for the United States to take the lead in hESC research. As we dig deeper, these arguments may not be so inconsistent after all.

There is much validity to the idea that the science will work out the right solution if given the power to perform the research. It could be that no real therapies will come out of hESC research, and that would cause the conflict to fade away. It could be that the "third way" proposed by Catholics and conservative Protestants in the United States will work, and there will be no need to destroy embryos; that would also cause the conflict to fade away. It also could be that remarkable cures will come out of the research; that would probably cause the public to wonder why there was ever a conflict in the first place. I share the hope that nearly every one of those I interviewed expressed in some

way or another, that stem cells from one or many of the sources, perhaps even a source that is still unknown, will transform regenerative medicine resulting in incredible cures for people who currently have little hope of living normal healthy lives.

Appendix A

Alternative Sources of Human Pluripotent Stem Cells, a White Paper
The President's Council on Bioethics (PCOB) - May 2005[98]

The PCOB outlined four possible sources of pluripotent stem cells that they believe would be ethically more acceptable because these sources would not require the destruction of human embryos.

Pluripotent Stem Cells Derived from Organismically Dead Embryos

"After fertilization in vitro, a high percentage of human embryos that reach the 4- or 8-cell stage undergo spontaneous "cleavage arrest" –that is, their cells simply stop dividing…Landry and Zucker propose that those embryos that have undergone irreversible cleavage arrest should be declared organismically dead and hence suitable (with proper consent) for harvesting of blastomeres for stem cell derivation."

Pluripotent Stem Cells via Blastomeres Extraction from Living Embryos

"Pluripotent stem cell lines could, in theory, be derived starting from small numbers of cells (blastomeres) removed from living human embryos…Blastomere extraction from living IVF embryos is currently performed to conduct what is called *preimplantation genetic diagnosis* (PGD)…pluripotent stem cells could be derived from single blastomeres removed from early human embryos without apparently harming them."

Pluripotent Stem Cells Derived from Biological Artifacts

"Under this heading are various proposals to construct a biological artifact, lacking the moral status of a human embryo, from which pluripotent stem cells could then be

[98] The President's Council on Bioethics. *Alternative Sources of Human Pluripotent Stem Cells*.

derived…For example, Council Member William Hurlbut has advocated what he calls, *altered nuclear transfer* (ANT), a procedure that, if successful, would offer a way to produce pluripotent stem cells within *a system that is biologically and morally akin to a complex tissue culture.* This proposal, as yet untested experimentally (even in animals), is conceptually based on modifying the procedure of somatic cell nuclear transfer (SCNT), now used to produce cloned embryos…ANT, the modified procedure proposed by Hurlbut, involves altering the somatic cell nucleus *before* its transfer to the oocyte, and in such a way that the resulting biological identity, while being a source of pluripotent stem cells, *would lack the essential attributes and capacities of a human embryo*."

Pluripotent Stem Cells via Somatic Cell Dedifferentiation

"A quite different route to the production of pluripotent stem cells would be to reprogram differentiated somatic cells so as to restore to them the pluripotency typical of embryonic stem cells…Because it involves neither the creation nor the destruction of human embryos, the common ethical objection to human embryonic stem cell research would not apply…For if it were possible to undo the differentiation of somatic cells, running development in reverse back to the state of pluripotency, it would in principle be possible for autologous pluripotent stem cells to be obtained from the body of any human being."

Appendix B

Interview Record

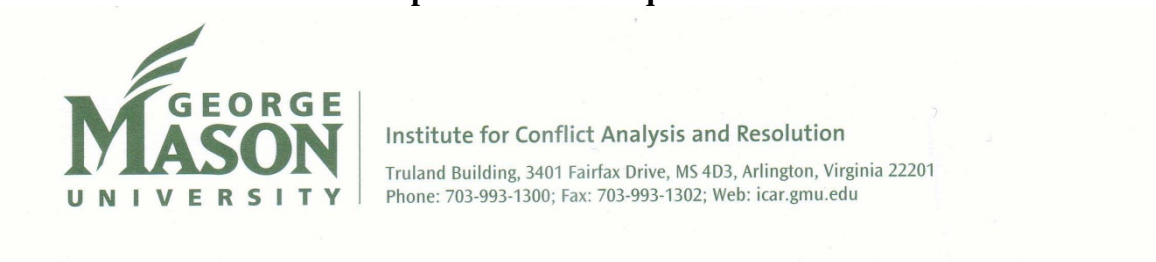
Table B.1 Interview Record

	Interviewed Expert	Informed Consent	Interview Date	Interview Time	Interview Location	Analysis Complete	Thank You Note Sent
	Prototype Interviews			**1-Hour Interviews**		**Verbal Request**	
1	Benson	11/30/2005	11/30/2005	4:00 PM	Springfield	12/30/2005	12/30/2005
2	Morowitz	12/14/2005	12/14/2005	3:00 PM	GMU	1/14/2006	1/14/2006
3	Jurith	3/15/2006	3/15/2006	1:00 PM	Washington	3/30/2006	3/30/2006
	Phase I Interviews			**30-Minute Interviews**		**March 21, 2006 Letter**	
4	May	4/3/2006	4/4/2006	10:00 AM	Catholic U	4/19/2006	4/19/2006
5	Lewis	4/4/2006	4/18/2006	2:00 PM	Telephone	4/20/2006	4/25/2006
6	Doerflinger	4/20/2006	4/20/2006	10:40 AM	USCCB	4/24/2006	4/26/2006
7	LyGrys	4/21/2006	4/21/2006	9:00 AM	Silver Spring	4/26/2006	4/27/2006
8	Gadlin	4/21/2006	4/21/2006	4:00 PM	Bethesda	5/1/2006	5/1/2006
9	Zwanziger	4/24/2006	4/24/2006	6:00 PM	Falls Church	5/5/2006	5/5/2006
10	Austriaco	4/26/2006	4/26/2006	7:00 PM	Telephone	5/10/2006	5/10/2006
11	Saunders	4/17/2006	4/27/2006	11:00 AM	Washington	5/23/2006	5/23/2006
12	Casper	5/11/2006	5/23/2006	2:00 PM	Telephone	6/6/2006	5/23/2006
13	Pacholczyk	6/15/2006	6/21/2006	11:00 AM	Telephone	7/7/2006	7/6/2006
14	Gomez-Lobo	8/31/2006	9/21/2006	2:45 PM	Georgetown	10/18/2006	9/27/2006
15	Zoloth	10/31/2006	11/1/2006	11:00 AM	Telephone	11/14/2006	11/9/2006

	Interviewed Expert	Informed Consent	Interview Date	Interview Time	Interview Location	Analysis Complete	Thank You Note Sent
	Phase II Interviews			**30-Minute Interviews**		**May 19, 2006 Letter**	
16	Arneson	5/24/2006	5/24/2006	3:30 AM	American U	6/10/2006	6/6/2006
17	Horne	6/1/2006	6/1/2006	3:00 PM	Bethesda	6/12/2006	6/10/2006
18	Comstock	6/7/2006	6/7/2006	11:00 AM	Washington	6/16/2006	6/16/2006
19	Sedgwick	6/7/2006	6/7/2006	3:00 PM	Alexandria	6/22/2006	6/21/2006
20	Cole	6/5/2006	6/9/2006	3:00 PM	Bethesda	6/27/2006	6/23/2006
21	Prentice	6/12/2006	6/12/2006	10:00 AM	Washington	7/5/2006	7/5/2006
22	Cole-Turner	6/14/2006	6/19/2006	10:00 AM	Telephone	7/6/2006	7/6/2006
23	Kilner	6/23/2006	6/23/2006	2:00 PM	Telephone	7/12/2006	7/10/2006
24	Johnston	6/26/2006	6/26/2006	10:00 AM	Telephone	7/21/2006	7/11/2006
25	Helpern	7/13/2006	7/13/2006	2:30 PM	Rockville	7/26/2006	7/21/2006
26	George	8/1/2006	8/1/2006	1:30 PM	Telephone	8/2/2006	8/2/2006
27	Breitowitz	8/11/2006	8/11/2006	7:40 AM	Silver Spring	8/14/2006	8/14/2006
28	Mitchell	8/30/2006	8/30/2006	11:00 AM	Telephone	9/1/2006	9/12/2006
29	Cameron	9/11/2006	9/11/2006	9:45 AM	Telephone	10/17/2006	9/12/2006

Appendix C

Sample Interview Request Letter



May 19, 2006

C. Ben Mitchell, PhD
Professor of Bioethics and Contemporary Culture
Trinity International University
2065 Half Day Road
Deerfield, Illinois 60015

Dear Dr. Mitchell,

Please help us in gathering data on one of the most significant social conflicts of our time. One of my outstanding students, Rob Ericson, is in the midst of his dissertation, *Bridging Solutions to the Science and Religion Conflict over Embryonic Stem Cell Research.* Rob would like to interview you for this research project. He is already familiar with the major scientific aspects and religious concerns; his focus will be on solutions.

Bill Saunders, Director of the Center for Human Life & Bioethics, The Family Research Council recommended that we contact you as a good source of information for this project. We believe you can provide key building blocks to help Rob craft a widely acceptable solution that will emphasize respect for all who are concerned with this problem. If you are able to give him 30 minutes of your valuable time, please indicate on the enclosed postcard how you prefer to be contacted or if you wish you can contact him directly at:

301-713-1373 x162 (daytime),
800-697-5137 (evenings), or
rob.ericson@noaa.gov.

Your input will not only add to the body of knowledge in this area, but there is a real potential for good solutions to this and other conflicts involving science and religion. Please call me if you have any questions or concerns and thank you for considering this request.

Sincerely,

Richard E. Rubenstein
Professor of Conflict Resolution and Public Affairs
Tel: 703-993-1307; 703-978-0909 (h)
Fax: 703-993-1302

Appendix D

Informed Consent Form

INFORMED CONSENT FORM

TITLE OF RESEARCH STUDY: Religion and Science Conflict of Embryonic Stem Cell Research

RESEARCH PROCEDURES: This research will explore solutions to the conflict over embryonic stem cell research, focusing on the intersection of religion, science, and ethics. If you agree to participate, we will ask for your opinion in a 1-hour interview.

RISKS: There are no foreseeable risks for participating in this research.

BENEFITS: There are no benefits to you as a participant other than to further research in the stem cell research conflict.

CONFIDENTIALITY: Upon your request, interview notes will not identify you, will be securely stored, and destroyed upon completion of the project.

PARTICIPATION

Your participation is voluntary, and you may terminate the interview at any time and for any reason. If you decide not to participate or if you withdraw from the study, there is no penalty or loss of benefits to which you are otherwise entitled. There are no costs to you or any other party.

CONTACT

This research is being conducted by Rob Ericson of the Institute of Conflict Analysis and Resolution at George Mason University. He may be reached at 301-713-1373 x162 for questions or to report a research-related problem. His faculty advisor, Dr. Rich Rubenstein may be reached at 703-993-1307. You may contact the George Mason University Office of Research Subject Protections at 703-993-4121 if you have questions or comments regarding your rights as a participant in the research.

This research has been reviewed according to George Mason University procedures governing your participation in this research.

CONSENT

I have read this form and agree to participate in this study.

☐ I agree to be audio taped. ☐ I do not agree to be audio taped.

Name	Signature	Date
_____	_____	_____

Appendix E

Approved Interview Questions

Table E.1 Approved Interview Questions

Solution questions: 1. What do you consider to be the most promising solution to the embryonic stem cell research conflict? 2. What would be your ideal solution to the conflict? 3. What are the most contentious issues in this conflict? 4. How do you think this conflict will ultimately be resolved? 5. During your work in this field, what ideas did not get adequate consideration? 6. How would you characterize the nature of this conflict: e.g., science vs. religion, liberal vs. conservative, medical vs. philosophical, rational vs. emotional, or cost vs. benefit? 7. Who are the most influential people thinking, writing, or debating this topic? 8. Who are the people we should pay more attention to on this topic? 9. Who are the people who get too much attention from the public relative to this topic? 10. What aspects of this conflict will be the most difficult to resolve?
Background questions: 1. What are your contributions to the science and ethics of stem cell research? 2. What would you like the general public to know about your position on this issue? 3. How did you get involved in this field? 4. If you had to choose a side, what side would you be on: e.g., favoring or prohibiting embryonic stem cell research? 5. Who or what influences your position on this conflict? 6. How have your ideas about stem cell research changed during your career? 7. What kind of event might cause you to reexamine your position? 8. Who are the people who are most likely to oppose your position? 9. Of those who oppose you, who has the most credibility? 10. What is the next step for you relative to this controversy?

Appendix F

Recommended Solutions and Analysis

The Reverend John S. Benson 2005-11-30
Pastor, Community Covenant Church, Springfield, Virginia

Recommendations:

- Recognize God's graciousness and care for life.
- Resolving these kinds of issues is the Biblical mission of the church.
- The church is the place where people of good will should be free to talk.
- People should not be ignorant, but rational.
- We have a stewardship to control life, intervene.
- Science also has that responsibility plus to find origins to God's created mystery.
- Organizations should bring people together to talk and listen.
- The Templeton Foundation could bring Catholic lay people into the discussion, people who have serious beliefs.
- Telling their story (feelings) is the key to trust and respect
- Taking time and repetition influences trust.
- There is urgency; we should respect and proceed; it's all part of the human flow.
- There is power in the community.
- Recognition is a form of power, as in Adam naming creatures.
- Naming gives control; identifies the object and leads to action.
- Science is all about naming.

Science and religion both have responsibilities to explore and understand God's creation. Both have a responsibility to control and intervene in life issues. In the monotheistic tradition, our ancestors were responsible for naming all of creation, another way of transferring power over creation to us. Naming identifies objects; a convention our culture now shares among all its participants leading society and individuals to some type of action. The action consists of making some use of the object, ranging from enjoying the object will observing how it fits into creation to employing the object for the good of ourselves and our society. The business of science fits into this pattern of all of human history; naming, observing, and employing the objects of our environment.

To study all aspects of human life is more than just acceptable; it is an obligation. Studying hESCs is the right thing to do and we should go forward with this type of research. But we have to be sensitive to the serious beliefs of many religious people, who find problems with how scientists intend to employ embryonic stem cells. Letting them tell their story is the key to trust and respect and taking the time to allow them to tell this story repeatedly helps to build up trust. So we need to take time to do this right, but as with all of life there is a paradox. There is also urgency. Taking into account the natural flow of all of human life, this research will certainly benefit many individuals and society as a whole. We need to move forward with respect.

The church would be a good place to carry on this discussion; resolving these kinds of issues is the mission of the church. An organization like the Templeton Foundation could bring people together from different traditions to study and help resolve this issue.

Dr. Harold Morowitz 2005-12-14
Robinson Professor of Biology and Natural Philosophy, George Mason University

Recommendations:

- Other cultures such as Sweden will move forward with the research.
- The research will go on somewhere.
- There is an example in the Nazis—should we use the results of their research?
- Would those who are against it use the results of the research?
- We should not worry, but move forward in this country.
- Favors a balance—Nancy Reagan changed her mind because of the life-saving and life-improving possibilities.
- There is risk in all medical procedures, for example kidney transplants.
- There is urgency because lives are at stake—money from NIH is being lost.
- Ideally, the opponents should opt out and not interfere--ethics requires trust.
- His son has a debilitating disease that could be helped by this research.

Human embryonic stem cell research is going to happen somewhere and we should be participants. Federal funding is an important issue because to do this research effectively, the amount of money needed could only be provided by a national support base. There needs to be a coordinated national effort to realize the practical therapeutic applications that would help so many people. When people realize the possibilities, especially when someone close to them could benefit from this effort, they often become advocates. It is a matter of human compassion. Also the blastocyst, the source of hESCs, is not in a category of human life anything like an implanted embryo or any other known type of human life. We could freeze a blastocyst in liquid helium, bringing the temperature down to near absolute zero, where there can be no molecular movement. Then we could return it to room temperature with no adverse effects, something you cannot do with any normal cellular structure; the cells would collapse and be destroyed, something that would not occur with the blastocyst.

There may be people who are against the research because they know that abuse is certainly within the capability of all human beings. Though this case is nowhere near the kind of problem the German society experienced with the Nazi doctors--that case remains unique, considering it does help to categorize the problem for some people. Since the research will move forward somewhere and it is highly likely that there will be a number of practical life-saving and life-improving benefits resulting from it, will those who are against it in good conscience be able to use the therapies that result? This is an ethical question where most people will ultimately conclude that the results cannot be ignored; they must be used.

There is urgency in this issue; lives are at stake and research money is slipping away. In medical advances there will be risks, but we should be willing to accept the risk to reap the benefit. We must move forward with strong ethical standards in place, trusting the institutions to abide by the rules that society sets up. Those who do not believe in doing the research should opt out themselves and not interfere with others who believe in doing it. There is room for both views in our society, and any personal decision people make at the front end of life does not have to lock them into another decision at the back end of life; all should be free to benefit.

Edward H. Jurith 2006-3-15
Director of Legislative Affairs, Office of National Drug Control Policy, Executive Office of the President

Recommendations:

- The research should move forward but there needs to be safeguards, for example during testing.
- Researchers are effectively self-regulated by their peer review processes.
- Independent review boards could review any objections.
- There should be a consensus between the religious and scientific proponents.
- A practical way to do this would be to have focus groups but the project should be coordinated by an independent think tank.
- The medical community has models of self evaluation that should be employed.
- Public policy should not be controlled by religious views, though these views lie in the background of policy decisions.
- An example of a similar public policy problem is the proposed needle exchange program—federal funds are prohibited though the proposal would solve the HIV AIDS problem.
- As a practicing Roman Catholic, he understands Catholic concerns about hESC research, but does not let these beliefs dictate his policy decisions.
- During the transition period, President Bush appointed him as the Acting Drug Czar and he carried out these duties in a non-sectarian and non-partisan way while awaiting the confirmation of the President's political appointee to the job.

Public policy should not be controlled by religion. Of course, most people have religious beliefs that they carry with them into their professional lives, but they should be careful not to let their personal beliefs overly influence their policy recommendations and decisions. Public policy affects everyone and needs to be developed in a pragmatic way. The hESC research should move forward in a deliberate and controlled way but there need to be safeguards in place, including peer review processes, independent review board oversight, and other medical self regulation and government oversight just as there would be in any medical research activity. These kinds of controls become even more important during the testing phases.

There should be a consensus among the religious and scientific proponents and opponents. Because it is a hot button issue, there should be an independent think tank employed to study the conflict. It is important that the group coordinating the study be independent and they do not hold a religious or political view that would influence the project. The objective of the study should be to lay out the best and least controversial path to hESC research possible.

This public policy issue is similar to the needle exchange program. Although the Federal Government provides block grants to the states for drug rehabilitation programs, the Government prohibits use of federal money for needle exchange programs. Providing new needles to drug addicts rubs a lot of people the wrong way; free needles, if not in fact, at least symbolically, condone intravenous drug usage. Though this view might make sense from a theoretical viewpoint, it does not actually have any influence on drug abuse but would make all the difference in the spread of HIV AIDS. There is evidence that most people at this advanced stage of this social problem, who are infected by the disease, were infected by unsterilized needles. Many states have independent needle exchange programs, but it would make more sense to launch a national effort to stop the disease through needle exchanges.

Dr. William E. May 2006-4-4
Michael J. McGivney Professor of Moral Theology
John Paul II Institute for Studies on Marriage and Family

Recommendations:

- The Westchester Institute is working on ideas to satisfy concerns on both sides.
- Altered Nuclear Transfer – Oocyte Assisted Reprogramming (ANT-OAR) provides a technical solution.
- ANT-OAR uses the cloning technique Somatic Cell Nuclear Transfer.
- ANT-OAR produces pluripotent stem cells that cannot become an embryo.
- The dean at JPII Institute, David Schindler objects, considering ANT-OAR to simply produce a disabled human embryo.
- The original ANT proposal produces a defective embryo, but the ANT-OAR technique is different.
- In ANT-OAR the donor cell is altered to change the instructions to prevent it from creating an embryo, the nucleus is removed from an oocyte, and this enucleated oocyte is fused with the donor cell.
- ANT-OAR creates pluripotent stem cells and thus a technical solution to the problem.

Dr. May recommends the ANT-OAR process as a technical solution that circumvents the ethical issues involved with hESC research. This technique, if successful, would produce pluripotent stem cells that could never become an embryo under any circumstances, but would still provide valuable research materials. He admits that some Roman Catholics, object that this technique simply results in a badly damaged embryo, and falls under the same ethical objections as hESC research does. A substantial group of people associated with the Westchester Institute for Ethics and the Human Person (Catholic roots) are supportive of the ANT-OAR solution and have presented robust counter arguments to Schindler's objections.

The ANT-OAR process involves somatic cell transfer (cloning), but unlike cloning techniques the process ensures that no human clone could be produced. The donor cell would be genetically altered so that half of the genes are turned off so that the hard shell of the blastocyst cannot form. The resulting fusion of the donor cell and the enucleated oocyte can only lead to stem cells that could never be implanted to grow a human being. It is important to note, that the Westchester Institute supports research in this technique, because this technique is still in the theoretical stage. Dr. May also points out that the resulting stem cells are not totipotent, because they have been preprogrammed not to form a placenta, but nevertheless can form all other cell types.

Kathy Lewis 2006-4-18
President and CEO, Christopher Reeve Foundation

Recommendations:

- She is not optimistic about arriving at a good solution.
- This problem is identical to abortion; right-to-life people have distorted the issue.
- Although hESC research is only 5% of the foundations budget, they favor unfettered research.
- We are so polarized over the issue that we could never craft an ideal solution.
- What is likely to happen? The future is scary and unpredictable.
- The direction we go will depend on the administration.
- This president has promoted and capitalized on a ground swell of negative opinion.
- We need to first understand the religious beliefs—what would make those groups comfortable?
- There are religious people who believe that God helps people—that idea needs to be promoted.

Ms. Lewis believes that only a change of administration will solve this problem, and the direction our country is going does not leave much optimism that the next administration will be any better. Because the President brings his religious beliefs into the oval office, the administration is hostile to hESC research. Though they are irrational, we need to understand and respect this narrow start of life belief system. The issue is like abortion, where the administration has cut off Medicaid funding to the very people who need the abortions most. So a solution could only accompany a new president.

She admits that, like Christopher Reeve, it is beyond her comprehension why it would be better to throw away unused embryos from IVF clinics rather than use them to create stem cell lines to be used for research. She suggested I focus on those who object to hESC research to find out what they would be comfortable with for a solution, but she is not optimistic.

Richard M. Doerflinger 2006-4-20
USCCB, Deputy Director, Secretariat for Pro-Life Activities

Recommendations:

- Catholics promote adult stem cells (ASC) and cord blood as the most promising sources of cures.
- In the end, the ASC solution will prevail, as people discover the benefits.
- For example, the idea of using fetal tissue to cure Parkinson's has become a non-issue because it doesn't work.
- When all of the hoopla surrounding hESC dies down, hASCs will be the answer.
- Catholics appreciate that we live in a secular society, but even a secular society needs strong ethics surrounding human life issues—ANT methods would be okay.
- Science needs to give due consideration to ethics and then proceed with reason.
- A compromise would be acceptable, except the other side is unwilling.
- The Bush compromise is one approach; Catholics can oppose hESC research and do not have to pay taxes to support what they don't believe in.
- But as part of the compromise the other side should be willing to indicate where to draw the line.
- Cloning should be prohibited, but some scientists are unwilling to rule out what they call therapeutic cloning.
- A slippery slope exists as long as these scientists will not define the bottom.
- New alliances strengthen the need to be sensitive to pro-life views: evangelicals are pushing themselves back into society and European green parties oppose genetic manipulation.

The traditional ethic of respect for the dignity of human life has been replaced by a trendier utilitarian ethic; the promise of miracle cures justifies what scientists want to do. For Catholics the purposeful destruction of human life is the issue. There is a third way, using stem cells that no one would object to. The ultimate solution will be the use of umbilical cord blood and adult stem cells, because they will be the source of therapies that work. For those interested in cures, enthusiasm for hESC research will quickly disintegrate as they realize no cures will be forthcoming. So that is how it will be resolved in the end. In the meantime, federal funding for hESC research should be restricted; Catholics accept that they live in a secular society, so research can go forward with private funding, not tax dollars.

Another solution is to compromise. Catholics, after registering their protest and continuing to oppose it, would understand if some hESC research continues, but there should be assurances that there are limits to this kind of manipulation of human life. For example, the ban on cloning should be codified more strongly in law; there should be strong ethical standards on the donation of materials, creating embryos strictly for research is going too far.

James LeGrys 2006-4-21
US Conference of Catholic Bishops

Recommendations:

- There has been almost daily progress in the area of adult stem cell research.
- Likewise, stem cells derived from umbilical cord blood have demonstrated miracle cures such as permanently curing childhood leukemia.
- Meanwhile, hESC research results have been a disappointment, but you don't see this news in the popular press.
- In the end, these methods that turn out to be no problem for Catholics will prevail in providing results in medicine.
- However, hESC research could surprise us all and provide cures.
- This presents Catholics with a struggle—can Catholics accept the legitimacy of the results considering that they object to the methods?
- Yes, if using those established hESC lines produce useful information leading to cures, and there are no alternatives, the Vatican has indicated that Catholics should accept the benefits, as long as they do not encourage more of the same work and do not provide cover for what Catholics consider to be illegitimate.
- Catholics do not argue these points based on scripture but rather on the basis of substance.
- In the tradition of Aristotle and Aquinas, Catholics consider the embryo to be a substance, just as in the doctrine of trans-substantiation—a real change in substance even if not proven chemically.

This is a theological problem. For Catholics, embryos in every stage and whatever the environment are objects of substance and therefore have a significance that goes beyond scientific description, analogous to the doctrine of trans-substantiation. Catholics object not as they would to abortion but as they would to intrauterine devices that prevent the implanting of the embryo in the womb. Though they object to the method, under certain circumstances they may accept any resulting benefits derived from hESC research.

Catholics are proactive about promoting research using adult and umbilical cord stem cells. Using these sources, researchers are making daily progress toward curing scores of diseases and injuries affecting children and adults. Though hESC research will most likely continue, public interest will wane as the results continue to be disappointing. Just as with the issues surrounding in vitro fertilization a decade earlier, Catholics are warning the public about the ethical issues surrounding hESC research. As with many things in life, the right will prevail in the end.

Howard Gadlin April 21, 2006
Director, NIH Office of the Ombudsman

Recommendations:

- This has to be resolved by the general public.
- The conflict is not primarily religious at all—it is one of different bioethics.
- Meaningful public discourse is necessary.
- The quality of the discourse needs to be greatly improved, rather than the current appalling media coverage consisting of sound bites.
- Solutions should be community based such as in the following cases:
  - The agro-ethics solution of Comstock in *The Vexing Nature*.
  - One of the Cambridge *Public Conversations Projects*, like the "Dialogues on Abortion: 1990-92".
  - Clinton's TOWARD ONE AMERICA: A NATIONAL CONVERSATION ON RACE.
- In dealing with the slippery slope concerns, get people to list and share their greatest fears.

This conflict is a public affairs type problem (perhaps not solely political or religious), but for some people it is a surrogate for the abortion issue. We can learn from attempts to build trust and understanding in communities in easing the tension over that national bioethics issue. The Cambridge project Boston Pro-life and Pro-choice Leaders Dialogue was one such case, prompted by a violent incident in Brookline, Massachusetts. The results of these discussions show that sincere people who disagree can dialogue effectively. There are many examples of these sorts of solutions.

Meaningful public discourse is necessary, but the quality of the conversation has to be raised significantly. It needs to become something different than a media event. High profile people can make that happen, as President Clinton did in dealing with race relations issues. In dealing with those who see this issue as a slippery slope leading to a bioethical disaster, listening is the key. They need to verbalize their concerns and they should not be dismissed without consideration.

Lee Zwanziger
Former Director of Research
The President's Council on Bioethics

April 24, 2006

Recommendations:

- People disagree on the nature of the object.
- Does the embryo have a moral standing, can it act apart, what are the circumstances, and what are the intentions?
- The altered nuclear transfer (ANT) proposal is interesting in the questions that it asks.
  - Is ANT an important breakthrough or just bad science?
  - Is ANT slowing down scientific progress and will it even work?
  - What is the locus of moral standing?
- The Belmont report is an important guide, a precedent for this controversy.
  - The basic ethical principles: respect for persons, beneficence, and justice.
  - Guidelines for selection of human subjects and informed consent.
- The problem is in the language—what is a human subject, and how can we get informed consent?
- Solutions require time to discuss and we must recognize the importance of money.
  - The government can only use the commerce clause to establish policy relative to this issue.
  - The solution will come from a well-crafted public policy position.

The nature of the conflict is one of public policy. A good public policy solution must be crafted in the context of precedent in scientific research ethical documentation. Among the key documents are the Nuremberg Code, the Belmont Report, the Declaration of Helsinki, etc. There is a lot of precedent and a lot of thought taking place on this issue, but the key problem is in definition. One of the key questions is still the definition of death, and one that needs to be answered in this case—does the harvesting of embryonic stem cells involve the death of a human life? We need time to discuss these issues. Public policy crafting takes time, but will ultimately produce a good solution. The Bush compromise was a policy statement supported by the government's source of power, the commerce clause, bought time to work out a better solution.

Regardless of the utility of the ANT solution, it has proposed new questions and spurred additional argument, and those are good things. It is helping to define the nature of the object while challenging all sides to come clean on their motivations; is the goal of science really therapy or actually basic research; do the religious objections draw their source from the nature of the object or a broader ethic related to sacredness of life?

Father Nicanor Austriaco April 26, 2006
Providence College

Recommendations:

- There is widespread agreement--all would like to relieve suffering.
- Why then the concern? Moral certitude implies that there will be social and political repercussions resulting from prudential matters dealing with human life.
- Science has no right to self-regulate as long as scientists use public funding.
- Science needs to serve the community like the military does.
- He has been tasked by the Bishops to explore a 3rd way.
    - Find pluripotent human stem cells available for research.
    - Work within a moral theology of human dignity—the image of God.
    - Consider the philosophical view of personhood—secular paradigm.
    - Remember the destiny of the human being.
- The options presented in the white paper by the president's council include:
    - Biopsy—this is tough because of the informed consent requirement.
    - Landry and Zucker's idea of using dying or dead embryos—this is a problem because it would be material cooperation with the IVF culture.
    - ANT (CDX2 or OAR)—opposed by some Catholic moralists and scientists who are overwhelmed and wary of these kinds of solutions.
    - Reprogramming (fusing cheek scrapings and embryonic cells)—a paper to be released soon explores the science of this option; a promising solution.

Nobody is opposed to relieving human suffering and there is clearly a need for human pluripotent stem cells for research purposes. Human embryos represent an established source for these stem cells, but Catholics oppose the use of human embryos in this way because harvesting these materials is a violation of human dignity. While some scientists believe they should move forward unimpeded with hESC research, they do not have the right to self regulate as long as they accept public money for this activity. The public has the right to debate this issue on moral grounds and the public should control how public money is used in research.

There is a third way: a technical solution that provides pluripotent stem cells not derived from human embryos. If altered nuclear transfer technology works, most Catholics would not oppose that solution; and if the reprogramming technique works, it would be acceptable as well, with perhaps even fewer objections. Catholics are supporting the research efforts to discover a good source of human stem cell materials that would fully satisfy the scientific community. Even these solutions require a commitment to a strict code of ethics, because it is not a trivial matter to obtain donor eggs to be used in these processes.

Bill Saunders April 27, 2006
Director, the Center for Human Life & Bioethics
The Family Research Council

Recommendations:

- Bioethical issues are affected by public policy and evangelicals and Catholics must be engaged.
- The conflict is over who defines the ethical limits.
- Religion has a place in the debate but often arguments are ad hominem.
- Scientists should not be allowed to decide, because there is too much conflict of interest involved.
- In this political atmosphere, who defines the limits may depend on who wins the next election.
- This issue should be decided by the people, and the way to do that is to allow the individual states to resolve it in their place and in their own way.
- This approach allows for a full discussion over the ethical issues, a methodology that doesn't necessarily work at the federal level.
- The whole conflict may blow away in less than 5 years as non-embryonic sources of stem cells emerge.
- This is what happened with the issue of using aborted fetuses in the treatment of Parkinson's—more reliable approaches begin to emerge.

This solution approaches the conflict as a public policy issue. The people need to decide how to resolve the conflict and religion has a role to play. Too often, the attacks are against the religious, though they see themselves as only the messengers, presenting society with a more traditional ethical view—the conscience of the nation, so to speak. The issue could be resolved through a more extensive public discourse. The conflict should be debated at the state level, where this kind of public discourse can be pursued in a less biased way. The federal government role will be decided in the next election.

By continuing to keep the ethical issues in the forefront, the religious can help keep scientists from moving forward with self-serving solutions. Meanwhile, the whole conflict may dissolve as a more acceptable technical solution emerges, negating the need to destroy embryos to obtain pluripotent stem cells.

Robert Casper, MD May 23, 2006
Samuel Lunefeld Research Institute
Toronto, Canada

Recommendations:

- Hematopoietic applications will obviate the need for hESC sources.
- At the Toronto Centre for Advanced Reproductive Technology (CART), they use hESC lines in cancer research only as a control substance to demonstrate the advantages of cord blood stem cell therapies.
- hESC research has a limited clinical potential.
- Defective embryos, ones that would never be implanted, can be used for research.
- They never destroy embryos and only use defective ones in research when donated by patients.
- It is good to research, to learn, and to help someone.

This solution is technical in nature. Dr. Casper does not have a religiously-based objection to using hESC materials in research; he just thinks there is a better way. By using hematopoietic techniques, CART has cured childhood leukemia in five cases to date. By concentrating and growing stem cells from well-matched umbilical cord blood, they have been able to transplant these cells successfully in lieu of bone marrow transplants. Among the clear advantages are the lack of any kind of impact on the donor and the less intrusive means of accomplishing the transplant, a simple injection of the stem cells. CART is continuing to research other applications and is on the verge of announcing another type of cancer cure using cord blood stem cells. These types of advances will obviate the need for hESCs.

At the same time there should be no objection to using defective embryos in developing hESC lines to support researchers' needs. We do need to learn more, but to meet the objectives of truly helping people, cord blood is the answer. There should be a multi-national effort at setting up cord blood banks to greatly assist in identifying donors with the proper HLA match for a particular patient in need.

Father Tadeusz Pacholoczyk, PhD June 21, 2006
The National Catholic Bioethics Center

Recommendations:

- There are new developments in alternate sources of pluripotent stem cells.
  - Germans have developed pluripotent stem cells form testicular extracts.
  - Reprogramming genetic-based strategies are showing promise.
  - These types of developments are a step in the right direction.
- Scientists need to change their culture.
  - A pre-determined position is often defended by principles beyond science.
  - There are monetary issues, such as licensing fees that promote hESC development—adult stem cells cannot be patented.
  - The $300 million planned in California is targeting hypothetical cures.
- There is a hESC proponent world view of eternal redemption.
  - New research ideas become a sort of religious proposal.
  - There is a new language springing up such as in Christopher Reeve's testimony.
  - There is a new type of search for eternal life gaining a strong foothold.
  - The New York Times editorial quoted an Oregonian as saying people need a fairy tale.
  - When considering the ends, there is an attitude that suffering is evil.
- Education is helpful—the mission is to promote sound thinking.
  - The sources of embryos are human beings.
  - Scientists need to focus on feedback.
  - There are many nuances in the potential solutions—think about adult stem cells.

This solution focuses on education—everyone needs to understand the science better. The real cures and the real potential will be found in adult stem cell (ASC) sources. Even the needed pluripotent stem cells may come from hASCs as in the recent work in Germany with testicular extracts and genetic reprogramming techniques. Education is necessary because even the medical community has lost track of the truth about ASC therapies (a presentation by Fr. Tad at Vanderbilt Medical School was well received as a science update).

There is a culture of death in our society where death is preferred over suffering. The idea that suffering is evil leads to a predetermined world view that discounts the value of life and leads to few constraints in relieving suffering.

Dr. Alfonso Gomez-Lobo September 21, 2006
Georgetown University
President's Council on Bioethics

Recommendations:

- This not a religion vs. science conflict; the Bible has nothing to say about embryology.
- The problem is new and started with the discovery of the ovum in 1827, so even the writings of St. Thomas Aquinas do not apply to this conflict.
- Human stem cell line research is important.
- The solution is to generate embryonic stem cells in a way that satisfies both science and ethics.
- There is hope in the 5th method proposed by Hurlbut.
  - Activity genes are silent and therefore there is no zygote.
  - This a way to create hESC lines from an embryo that could never be implanted and therefore would not involve killing of a human embryo.
- The Advanced Cell Technology's Robert Lanza's claim that they have created stem cell lines in an ethically acceptable way is overstated.
  - The blastomeric biopsy method of producing stem cells did not work.
  - Lanza's group has already destroyed multiple embryos in the process of trying to develop their method.

It is important to recognize that reproductive science is a very modern endeavor, and neither the Bible nor the great scholars of the faith had anything to say about the actual science until after 1827. The ability to conduct regenerative medicine is important but the conflict involves aspects of life and death, and therefore enters a moral realm in addition to a scientific realm. There is no middle ground between "okay" and "wrong" in this case. The in vitro fertilization technique has created a monster not imagined by the early moral scholars. It is critical to develop a technology acceptable to science and ethics.

The solution is the 5th method proposed by William Hurlbut, a way to create embryonic stem cells that are preprogrammed without the set of genes necessary for the embryo to become a human being under any circumstances. This provides the stem cell material needed by science but presents no objections among ethicists, there is effectively no embryo killed when harvesting the materials needed to create new stem cell lines.

Dr. Laurie Zoloth November 1, 2006
Northwestern University

Recommendations:

- This conflict is a zero sum game where the issue is the life of the embryo.
- If you believe the embryo is a human life, then hESC research is unthinkable under any circumstances.
- Beliefs cannot be changed and we should not attempt to do so; people must act on their beliefs.
- The technical solutions are non starters—even the Catholics will not agree to these kinds of solutions.
- But it is a duty of humankind to heal and the research must go forward.
- The majority of Americans support hESC research and the 2006 election will provide evidence of support for that fact.
- There will be conscientious objectors as there were during WWII—people interpret the scriptures differently.
- The majority rules and the minority have been heard—they should provide private funding to support research that is aligned with their belief system.

The nature of this conflict is driven by the understanding of the moral status of the source of hESCs and the process of how to get the research materials. Contributing factors include the aging of the population and need for justice in distribution of the resulting products and freedom to choose for the greater population. We have a duty to heal and the majority of Americans support hESC research. The 2006 election will be a referendum on this issue in many local elections, such as in Illinois and Missouri.

People interpret the scriptures differently, and people should not be expected to compromise on their beliefs. In other social issues of life, such as pacifism and the right to refuse medical treatment should be honored, but it would be contrary to the norms of our society to forgo campaigns that the majority of the people consider to be essential. Roman Catholics and evangelical Protestants have a right to object and make personal choices, but not to alter the chosen actions of the majority in our society.

Lynn Arneson
Assistant Professor of Biology
American University

May 24, 2006

Recommendations:

- This is not the kind of conflict that can be solved by meeting half way.
- The basic question is what is life and when does it begin.
- Embryos should be treated with respect and dignity because they have the potential to become human beings.
- Embryos are not persons and do not have rights.
- The hESCs should be derived from embryos voluntarily donated for research.
- Government funding should be provided, allowing society to regulate private companies doing the research.

All sources of stem cells should be used in research because of the tremendous potential for human cures. Some research will not pay off in the form of therapies, such as the example of the once hopeful gene therapy idea, but there is still much to be learned from the basic research and studying all possibilities. So far hASCs have provided real cures and there is some potential to derive multipotency from some hASCs, so maybe hESCs will not be as useful as some hope, but we can't know that until we do the research.

Among the worst problems resulting from the current approach to ESC research is the lack of the ability of the Government to regulate private companies. Government funding should be provided to broader sources of stem cells but regulations should accompany the funding. Somehow there has to be a way to ensure that embryos are treated with respect and dignity, but to grant embryos "human rights" is going too far. The question of human life has to be linked with a living mother, not just the donors.

McDonald Horne, MD June 1, 2006
Hematologist, NIH

Recommendations:

- There is no problem with a slippery slope.
  - The slippery slope idea is a result of fear.
  - History provides examples of self correction.
  - As abuses occur, regulations upon regulations correct the problem.
  - The press helps keep the scientist honest
  - Science must practice financial accountability when NIH grants are involved.
- Understanding reduces opposition among people who are willing to learn.
  - Contradictory beliefs cause a lapse of thinking.
  - Anxiety about mortality and life issues contribute to the problem.
  - Scientific education can increase security among the willing.
  - Some people are unable to separate hESC research from abortion.
- This is a different kind of research and it has amazing potential.
  - Working with tissue instead of whole organs is a new concept.
  - These materials are malleable so they should not be wasted.
- NIH should encourage hESC research and NIH grants will come with controls.

Education would solve the problem for a lot of people. There may be a significant number of people who believe the sources of hESCs are aborted fetuses. There are others who maintain contradictory beliefs, such as support for IVF for reproduction that they have not faced up to the fact that there are huge numbers of unused embryos as a result of this policy. Because these issues involve life and death concepts, people are unable to face up to the facts; science education would help, but there are some who are unwilling to learn. In addition, if people understood better the amazing potential of hESC research they would not want us to pass up this opportunity.

There should be more support from NIH in the form of grants, while establishing firm controls that anticipate possible problems of abuse. There is always a potential for abuse, so everything should be out in the open. NIH has had cases of abuse that when exposed had to be corrected; the public will not stand for even the appearance of conflict of interest in government spending and administration. The press keeps people honest, and congress will step in when an agency or institution does not comply with strong ethical standards. The slippery slope is not inevitable; in an open society there will always be corrections in place.

Amy L. Comstock June 7, 2006
CEO, Parkinson's Action Network

Recommendations:

- The primary goal is the cure of Parkinson's disease (and others of course); to date there are no cures—treatments address symptoms only.
- The dream is to use stem cells to replace brain damaged areas that would normally produce dopamine.
- Those opposing hESC research are in the minority; those in favor are at 74% and increasing as the public understands the issues better.
- One possible solution consists of three steps that must be linked.
  - 1st step: make reproductive cloning illegal.
  - Create medical research ethical guidelines that address the concerns of science and bioethics; this could be done by NIH and could defuse political conflict.
  - Be mindful of the living.

The possible solution suggested here is focused on curing debilitating diseases like Parkinson's. As people understand the science better and misinformation is removed, there is more support for using hESCs in addressing these problems. The remedy requires less emphasis on the politics of the issue and more on benefiting the living.

To resolve this problem, there must be a focus on ethics and the steps in the process need to be linked. The first step is to make reproductive cloning illegal—you can separate reproductive and cloning for medical research. Only the most extreme outliers would favor reproductive cloning, but SCNT for research may be the key to cures—for example SCNT materials may be needed to create Parkinson's in the lab. A necessary step to ensure there is a clear divide between the two cloning paths is to establish ethical guidelines. At the same time, the ethical guidelines need to address other hESC sources to widen the research effort. The NIH could bring science and bioethics together to create such guidelines that are not politically based. In all of this we need to be mindful of the living.

Timothy Sedgwick
VA Theological Seminary

June 7, 2006

Recommendations:

- At the core of this conflict is the question of when human life begins.
- People of good conscience can disagree on this issue.
- Public policy can gain traction on common ground.
  - The role of government is to enact laws
  - The purpose of ethics is to protect values.
  - Society is deeply divided over the ethical issues.
  - Laws must be enforceable or they undercut respect for law.
  - There is a capacity for common purpose.
- Research must be conducted with transparency and norms enforced—a respect for life.
- Solution steps should recognize the role of government and the role of norms.
  - On one end, there needs to be legal enforcement of a few laws that address major ethical norms of common agreement.
  - There is an area of moral judgment.
- You can adjudicate solutions in small groups of 4 or 5.
  - Provide common background information
  - Ask how and why views have changed during discussions.
  - Compile questions that are still outstanding.
- How can we expand the field?
  - Using cognitive dissonance can challenge beliefs and prompt people to establish more consistent judgment.

This solution recognizes that people of good conscience can disagree on moral issues such as when life begins. But we can carve out some common ground where public policy can gain traction. A few practices, such as reproductive cloning, should be outlawed, but the laws must be enforceable in order to maintain respect for law. There is a difference between what is outlawed and what remains as a moral judgment. To maintain respect for societal norms (beyond the actual law), research must be conducted transparently, with a respect for life.

On a small scale conflict of this type can be resolved using techniques of cognitive dissonance. In ethics classes, groups of 4 or 5 can exchange ideas after they are taught a common basis to differentiate between fact and value. Participants can challenge potentially inconsistent thinking, such as a position that supports IVF but bans all hESC research. After sufficient discussions, the moderator asks two questions: (1) how did views change and why and (2) what questions remain outstanding? This type of conflict resolution is focused but may not work as a broad global strategy. In fact though people can discuss divisive issues respectfully, they may not change value-based positions.

Dr. Laura Cole June 10, 2006
NIH – Developmental Neural Science

Recommendations:

- There are potential legislative solutions on the horizon, such as the Frist bill to remove some of the limitations on hESC research allowing couples to donate unused IVF embryos and the Castle-Degette bill to relax the August 1, 2001 date restriction on the creation of stem cell lines.
- Misinformation is a problem (e.g., the misconception that hESCs are derived from aborted fetuses) and education would help clear up some of the problems.
- The NIH web site, http://stemcells.nih.gov/ serves to educate the public on stem cells and stem cell research.
- The NIH also helps researchers by paying a portion of the WARF patent fees to bring down the cost of administration-approved hESCs for research down from a minimum of $5K to only $500.
- Privately funded efforts continue to conduct research using additional hESC lines.
- Research using mouse hESCs continues to demonstrate new possibilities, such as repairing a crushed spinal cord.
- Researchers are attempting to pick low hanging fruit, such as deriving a possible cure for Parkinson's from stem cell research.

The NIH is encouraging multiple types of stem cell research while complying with the President's policy on hESC research. Making hESCs more available and less costly will help those who want to do the research. There are many new possibilities for cures emerging from research supported by public and private funds. The NIH funds adult stem cell research and hESC research from hESC lines created prior to August 1, 2001. Some state-sponsored stem cell research, such as Proposition 71 programs in California, have fewer restrictions and some privately funded research, such as work done at Geron Corporation has even less restrictions.

Education, such as the information provided on the NIH stem cell web site at http://stemcells.nih.gov/) will help the public to understand the issues better. Several legislators such as Senators Bill Frist (R-TN) and Orin Hatch (R-UT), and Representatives Mike Castle (R-DE) and Diana DeGette (D-CO) have sponsored bills to relax the restrictions on hESC research.

David A. Prentice June 12, 2006
The Family Research Council

Recommendations:

- The goal is out there in the distance and we all should be moving toward it.
- Science is discovering that the ASC is malleable and supports a therapeutic goal.
- For basic science the need is for a pluripotent stem cell.
  - Hurlbut supports ANT-OAR and Rudolf Jaenisch of MIT provides proof of principle with mouse research.
  - Landry and Zucker have proposed harvesting pluripotent human stem cells derived from early IVF embryos that have spontaneously died.
  - Kevin Eggan, of Harvard, proposes reversing the development process, reprogramming skin cells to obtain pluripotency.
  - Robert Lanza, Medical Director at Advanced Cell Technologies, produced stem cells from a single-cell embryo biopsy similar to that used in preimplantation genetic diagnosis (PGD)
- In public policy issues there will be a divide and we need to find the bridge.
  - We need to weigh the moral principles.
  - When expending resources we need to ask why.
  - It is likely that whatever the solution some will be unhappy.
  - The religious see an ethical divide.
  - There are also secular objections to hESC research.

If we look down the path of the future it is possible for all sides to visualize the same objectives out there. If the goal is therapy, then adult stem cells are showing more promise. If the goal is basic science, than alternate sources of pluripotent stem cells can do the job. The President's Council on Bioethics *White Paper: Alternative Sources of Pluripotent Stem Cells* provided several alternative sources of pluripotency that may help resolve the issue. All of these alternatives have been studied enough to indicate their potential for producing human hESCs suitable for research.

When we lose sight of the main goals, society stalls out in solving the problem. It is proper to weigh the moral principals while asking why public resources should be devoted to this type of research. There is room for compromise but there will always be a few who are unhappy with the results. There are several changes possible in the political sphere, such as pending legislation and the likelihood that the next administration will modify the current policy.

Ronald Cole-Turner June 19, 2006
Pittsburgh Theological Seminary

Recommendations:

- ANT is not so much a solution as a thought experiment; can there be a technological solution to a moral problem?
- There can be a middle way; there could be a political solution that stakes out a centrist position.
  - How do we get there? It would take a new administration—Bush would not be able to craft a political solution now.
  - There are some things we would all agree with—both libertarians and federalists.
  - But only a few practices should actually be prohibited: e.g., prohibiting reproductive cloning.
  - After that, individual states should be allowed to ban practices according to their local political leanings.
- We need to clarify the funding issues.
  - The federal government should not fund activities that are offensive to a large proportion of the population.
  - State funding and private funding would still be available where there is enough interest.
- Some politicians, e.g., Senator Jim Talent (R-MO); and some church leaders, e.g., Rick Warren (*Purpose Driven Life*) are moving their positions more toward the center.

This proposal is a political solution. There is a middle way, but it will take new political ideas to get there. Some politicians, such as Senator Jim Talent (R-MO) and Senator Bill Frist (R-TN) are working on political solutions. We should prohibit only a few things like reproductive cloning, and restrict funding for practices that are highly offensive to a large proportion of the population. Trough the political system people should influence local decisions about prohibiting or funding specific practices in their particular states. Private funding should continue. The current administration will be unable to make policy changes, so the next administration needs to work through the funding issues.

John F. Kilner
Trinity International University

June 23, 2006

Recommendations:

- Pluripotent, when describing stem cells is the golden word.
- We should define our objectives: to find treatments and to understand how the embryo works.
- Adult stem cells will not satisfy the need to understand human development.
- hESC research is of national importance and we should rally around this effort.
  - There may be methods of getting pluripotent stem cells from adult stem cells (see the white paper).
  - Using biopsy methods to create pluripotent stem cells is close.
  - Biopsy is being done in a way right now—PGD is incredibly unregulated.
  - Biopsy after the 8 cell stage (16^{th} day) is controversial because that is the twining stage.
  - Acceptable ANT – OAR solutions may be farther away.
- The good news is the host of studies involving ASC and the resulting cures.
- The solution may be to recognize the concerns of others and make sure they are addressed.
- We need to make it clear that we have compassion for the weak. All groups need to recognize (1) the needs of hurting patients, (2) the problems some have in destroying embryos, and (3) the problem of obtaining the huge supply of eggs needed without endangering the donors.
- We need to protect the vulnerable, build up trust, and get it all out on the table for debate.

There is no doubt that pluripotent cells are needed for therapy and research. But the objectives of hESC research need to be defined and honestly put before the public for discussion. To meet the objective of therapy, hASCs are already demonstrating good results in some areas. For the objective of research there are potential ways of getting pluripotent stem cells without destroying embryos. The biopsy approach will soon be a reality and will meet with fewer objections than the current method that destroys embryos. There are some technical hurdles yet to be leaped and it remains a question if attacking them is a waste of time.

In public discussion, we need to clip at the edges of the larger issues to ensure all concerns are addressed. We need to protect the vulnerable. But who are the vulnerable: the embryos, the hurting patients, the women who donate eggs? New SCNT approaches will require a huge supply of eggs, and we need to pause and think of how we would get them through safe methods. Right now in IVF processes, 16 of 100 women develop ovarian hypertension syndrome. Judy Norsigian (*Our Bodies, Ourselves*) has come out against hESC research for just this reason. Addressing these issues honestly and openly can help build trust and achieve a solution to this issue of tremendous national interest.

Josephine Johnston June 26, 2006
The Hastings Center

Recommendations:

- Why do we want to resolve the conflict?
- The continued debate is beneficial as long as it doesn't lead to discord and polarization.
- Agreement is not necessarily good; in this case the discussion is a valuable interaction among scientists and ethicists.
- People need to be better informed about the truth.
- We need to think together, understanding the arguments of others; there is a valid basis for their beliefs.
- For sure, we do not want people to give up their beliefs.
- People need to recognize the logic in other positions and be open to persuasion.
- Meaning of life issues are important to everybody but it is okay for scientists to focus on the study of life.
- Human psychology is a factor.
- It is likely that the science will move forward regardless and the problem will go away as a political issue.
- As cures result, people will identify with the need in personal ways.
- These kinds of needs invoke an emotional response, e.g., California Prop 71.
- Don't forget the other ethical issues, such as the concerns of the donor.
- But also remember that the debate is far different than it is for abortion.

This solution does not seek to cut off debate, but it is concerned about discord and political polarization. The continued public dialogue prevents this issue from turning into a negative conflict. Some of the norms of the discussion include: (1) getting better informed, (2) focus on the truth, (3) understand the arguments of others, (4) recognize the logic of other positions, (5) do not expect people to give up their beliefs, (6) recognize that human psychology is an important factor, (7) realize that meaning of life issues are important to everyone, and (8) realize that the scientific study of life is essential.

The conflict will most likely play out in this way; as more people identify with health needs and as cures start to emerge, the political issues will fade. But that's not the end of the conflict; other ethical issues will emerge, such as the rights of egg-donor women.

Dr. Jacob Helpern July 13, 2006
Partnership for Jewish Life and Learning

Recommendations:

- There is no conflict between science and religion—the Torah is neither a history book nor a science book.
- The Torah tells us how to live: values, ultimate questions, and the meaning of rituals. Religion is our whole life.
- Halacha is a term that encompasses the legal aspects of Jewish practice.
- Human life is very important and cannot be taken or surrendered except for certain situations where another life is threatened.
- We are also to honor the dead, but organ donation is okay to save others.
- The embryo is not a life that falls under the above rules.
- It is acceptable to use the embryo to develop organs to save lives.

The Torah has a lot to say about the importance of human life; we understand the prohibition against murder, but giving up one's own life is also prohibited except in certain circumstances that involve other lives or critical values, such as desecration. Your life does not belong to you. Because the Torah is not a science book, there is no conflict. The embryo is not the type of life that would fall under the strict value placed on life by the Torah. The embryo can be used to develop organs to save the lives of others.

Dr. Robert George August 1, 2006
Princeton University

Recommendations:

- The issue is the view of the embryo: a nascent human being or an earlier stage of human life. It depends on your worldview.
- A good prediction of a person's position on this issue is regular attendance at a church or synagogue.
- Non-embryonic pluripotent stem cells would solve the problem.
- ANT and reprogramming show promise and would have the advantage of providing a genetic match—necessary for therapeutic applications.
- The IVF excess materials is a side show—only 2% of the embryos would be available for research; the remainder would be saved for those wanting children in the future and those donating the embryos for adoption.
- Those available would be products of a genetic lottery—a genetic match for no one.
- Lord Winston, a British scientist and supporter of embryonic stem cell research warned that the benefits have been oversold and he predicted a public backlash.
- You can't go forward with a policy that half of the Americans oppose on ethical grounds.

This conflict is a moral issue and depends on a person's worldview. Is the human embryo a nascent human being or do embryos become a human being at a later stage. Each of these worldviews is legitimate but you can't go forward with a program that half of the Americans object to on moral grounds. There is a correlation between regular church or synagogue attendance and belief in the dignity of the human embryo. The cause and effect link is uncertain but there is something there that cannot be ignored.

Alternative technical solutions as outlined in the "white paper" would solve the problem. There would be pluripotent stem cells available for research and regenerative medicine while the half of the population that does not believe human embryos should be destroyed for research would not object. These sources would provide genetic matches for those needing the therapy promised by pluripotent stem cells.

American medicine will continue to lead the world, and we need to establish the high road. Of course other societies have different moral standards—the Chinese harvest the organs of prisoners as needed for the remainder of the population. We need not fear that because we have better moral standards that somehow the rest of the world will get ahead of us technologically.

Rabbi Breitowitz August 11, 2006
University of Maryland

Recommendations:

- When life begins and when human life crosses a line to be deserving of human rights is the crux of the issue.
- Everybody would recoil at the idea of sacrificing a child to save an adult or even 1000 adults.
- We need to respect the rights of the minority, but at what cost?
- The Bible supports saving lives, and the demands of society must be considered.
- Spare embryos are available and would be destroyed anyway.
- There may be a hierarchy of medical needs but science cannot trump religion automatically.
- There is a scientific egotism and all sides should be honest about the issue.
- The debate needs to be based on the truth and a good understanding of the truth.
- These arguments have satisfied this orthodox synagogue and probably would in most Jewish communities.
- There needs to be an understanding of the Catholic position as well, recognizing evil as evil is employed instead of a moral calculus approach.
- Also the view that allowing the research in society but limiting funding sources has merit as well as a means of protecting the moral fiber of our society.
- The research will go forward anyway with state and private funding.
- The government needs to provide uniformity and oversight.
- Alternate sources of high plasticity stem cells would help us avoid the conflict.
- Adult stem cell sources are underutilized.
- The potential is extraordinary; eventually it will all become true.

There needs to be a good understanding of the truth of embryonic stem cell research. Life is so important that it is unacceptable to sacrifice one for the good of another or even one for the good of many others. So the question becomes: what is the status of the human embryo and what rights does this form of life deserve? The Jews distinguish between the embryo in fertility clinics and the implanted embryo. It is reasonable to recognize the IVF embryos will someday be destroyed, so by separating the decision to create an embryo from the decision to donate, it is more than acceptable to use the embryo for the good of others. These arguments are widely accepted even in orthodox congregations. An open debate of the facts will help resolve the conflict.

But the scientists must also be honest that although the research will someday produce great results the need for embryonic stem cells may be overstated. Alternate sources of high plasticity stem cells may be a partial solution and adult stem cells themselves have not been fully exploited. These solutions may help us avoid the conflict at least for awhile. In addition there is something to be said for the other major positions on the issue: the catholic concerns for the weakening of the moral fiber of society and the evangelical point that tax dollars should not be spent on something that so many find to be morally unacceptable. Allowing state and private funding along with limited federal funding is okay, but there also needs to be government oversight of the research.

Dr. C. Ben Mitchell August 30, 2006
Trinity International University

Recommendations:

- The conflict revolves around the moral status of the embryo.
  - This is not about abortion—there are no women's rights issues.
    - The Dickey Amendment restricts funding creating or destroying embryos for research within HHS.
- There should be a charitable discourse on the conflict.
  - To some the 400,000 frozen embryos represent a gold mine.
  - The free market is a factor where products and reputations are made.
  - Scientists believe in investigating all avenues with no restrictions.
  - To some there is no reason for restrictions; the embryo is symbolic only.
  - For others the embryo has a moral status—not the rights of a child, such as the right to an education, but at least a rights to not be harmed.
  - Children cannot speak for themselves but cannot be the subject of research that does not benefit the individual—shouldn't that apply to the embryo?
  - At least, money should be restricted where appropriate.
- This does not have to be a winner take all solution—for example society does not outright ban smoking but there is a social disapproval that has an impact.
- The issue should be kept before the consciousness of society.
- It is likely that some therapies will result from hESC research and there will be additional issues to grapple with coming out of that result—like the rights of donors, additional risks to consider, and tough decision on use of the therapies.

The conflict is all about the moral status of the embryo, and that drives opinion on legitimate use or protection of these human entities. Charitable discourse is the solution, and people need to recognize the various motives of those who want to use the embryos for research ranging from legitimate scientific curiosity to the drive to enjoy fame and fortune. There are a lot of things that society should do to limit what is done while not outright banning the use of embryos in research. For those who are against the use of embryos in research (tantamount to killing them), they can use public consciousness to define social norms supporting their point of view. How we describe people has an influence on societal opinion.

It is likely that as the science runs its course that the therapies will come from several sources and techniques. That will drive what people expect and will present a multitude of addition all ethical issues. If we were to use more widely acceptable sources of materials such as ANT and ACT techniques, it would save us from many of the ethical difficulties of the future. If it doesn't matter what the source is why not use the more acceptable ones?

Dr. Nigel Cameron September 11, 2006
Institute on Biotechnology and the Human Future

Recommendations:

- Some treat this conflict as another front in the abortion war--it is not about abortion.
- We need to frame the conflict differently so that we have a common approach.
- In the west, we are children of the enlightenment and part of that is about human dignity.
- People with different motivations can and do participate in policy making.
- There should be a complete mix of disciplines involved: academics, public policy makers, business people, and researchers.
- The media hosting the discussion should include focus groups, web sites, and email newsletters.
- The groups engaged in discussion should work on integration of ideas, emerging areas of commonality.
- Relationships are critical to the process of thinking together; fresh paradigms and a focus on the bigger issues will result.
- There are market aspects to this conflict and research should result in a stabilized market.
- There are local aspects to the conflict (e.g., prop 71) as well as an important global perspectives (e.g., Canada, UK, and Germany).

The solution is to bring a diverse group of people together to discuss the conflict in a serious and open minded dialogue. Thoughtful people, who at least understand each other, can listen to and appreciate opposing views. The participants will not only have differing views, but they will also come from different disciplines so they approach the conflict in a variety of ways. The only firm rule is that the participants are not to talk about abortion or aspects of the conflict over abortion. The hESC research conflict is not about abortion and if people treat it as just another front in the abortion conflict, they will not get anywhere in their discussion. The dialogues sponsored by the Institute on Biotechnology and the Human Future have the effect of raising the nature of the conflict to new levels, to a more civilized discussion. These groups have included such diverse people as Judy Norsigian and Richard Doerflinger, who approach the conflict from opposite directions but have come to a surprising level of agreement.

The expert participants then need to bring the dialogue to the American people, in a verity of forums, such as focus groups, town hall meetings, panel discussions, and one way communications such as web sites and email newsletters. The idea is to emphasize free speech and free association in ways that open up the discussion in constructive ways.

APPENDIX F

Additional Suggested Research Efforts

Explore funding for additional work.

- ☐ Compile denominational positions.
- ☐ Explore minority religious positions.
- ☐ Conduct additional national surveys.
- ☐ Survey churches and synagogues.

Test the Shared Vision Model.

- ☐ Validate scientist's concerns about religious objections.
- ☐ Update the current state of the bioethics
- ☐ Analyze possible innovative solutions
- ☐ Conduct prototype dialogues.

Figure F.1 Additional Suggested Research Efforts

BIBLIOGRAPHY

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Alexander, Denis and Robert. S. White. *Science, Faith, and Ethics: Grid or Gridlock?* Peabody, Mass.: Hendrickson Publishers, 2006.

Aristotle and Roger Crisp. *Nicomachean Ethics*. Cambridge: Cambridge University Press, 2000.

Augustine and E. B. Pusey. *The Confessions of Saint Augustine*. New York: Collier Books, 1961.

Barber, Benjamin. R. *Jihad vs. McWorld*. New York: Ballantine Books, 1996.

Barbour, Ian. G. *Nature, Human Nature, and God*. Minneapolis: Fortress Press, 2002.

——. *When Science Meets Religion*. San Francisco: Harper, *2000.*

Brooke, J. H. Science and Religion: Some Historical Perspectives. Cambridge: Cambridge University Press, 1991.

Buber, Martin. and R. Gregory Smith. *Between Man and Man*. London: Routledge, 2002.

——. and Walter. A. Kaufmann. *I and Thou*. New York: Scribner, 1970.

Burton, Gideon. "The Forest of Rhetoric: *silva Rhetoricae*." Brigham Young University, http://rhetoric.byu.edu/ (accessed November 14, 2007).

Cameron, Nigel M. de S. "About the Human Future." Institute on Biotechnology & the Human Future. http://www.thehumanfuture.org/ (accessed November 14, 2007).

Cassirer, Ernst. *An Essay on Man: an Introduction to a Philosophy of Human Culture*. New Haven: Yale University Press, 1992.

——. *The Logic of the Cultural Sciences*. New Haven: Yale University Press, 2000.

——. *The Philosophy of Symbolic Forms*. New Haven: Yale University Press, 1953.

Collins, Francis S. *The Language of God: a Scientist Presents Evidence for Belief*. New York: Free Press, 2006.

Colson, Charles. W. and Nigel M. de S. Cameron. *Human Dignity in the Biotech Century: a Christian Vision for Public Policy*. Downers Grove, Ill.: InterVarsity Press, 2004.

Cornelius, D. K. and E. St. Vincent. *Cultures in Conflict: Perspectives on the Snow-Leavis Controversy*. Chicago: Scott Foresman, 1964.

Covey, Stephen R. *The 7 Habits of Highly Effective People: Powerful Lessons in Personal Change*. New York: Free Press, 2004.

Danforth, John C. *Faith and Politics: How the "Moral Values" Debate Divides America and How to Move Forward Together*. New York: Viking, 2006.

Docherty, Jayne Seminare. *Learning Lessons from Waco: When the Parties Bring Their Gods to the Negotiation Table*. New York: Syracuse University Press, 2001.

Dodd, James. Crisis and Reflection: *An Essay on Husserl's Crisis of the European Sciences*. New York: Kluwer Academic Publishers, 2005. http://magik.gmu.edu/cgi-bin/Pwebrecon.cgi?BBID=1313898 (accessed November 15, 2007)

Einstein, Albert. *Einstein on Humanism*. New York: Carol Pub. Group, 1993.

Eliade, Mircea. *The Sacred and the Profane; the Nature of Religion*. New York: Harcourt, 1959.

Farley, Margaret. A. *Compassionate Respect: a Feminist Approach to Medical Ethics and Other Questions*. New York: Paulist Press, 2002.

Ferree, Myra Marx, William A. Gamson, Jürgen Gerhards, Dieter Rucht. *Shaping Abortion Discourse: Democracy and the Public Sphere in Germany and the United States*. Cambridge: Cambridge University Press, 2002.

Fisher, Roger and William Ury. *Getting to Yes: Negotiating an Agreement Without Giving In*. London: Arrow Business Books, 1997.

Foucault, Michel. *Discipline and Punish: the Birth of the Prison*. New York: Vintage Books, 1995.

Fox, Cynthia. *Cell of Cells: the Global Race to Capture and Control the Stem Cell*. New York: Norton, 2007.

Fox, Michael. J. *Lucky Man: a Memoir*. New York: Hyperion, 2002.

Frankl, Viktor E. *Man's Search for Meaning; an Introduction to Logotherapy*. Boston: Beacon Press, 1963.

Gifford, Don and Donald E. Morse. *The Delegated Intellect: Emersonian Essays on Literature, Science, and Art in Honor of Don Gifford*. New York: P. Lang, 1995.

Glass, Bentley. *Science and Ethical Values*. Chapel Hill: University of North Carolina Press, 1965.

Gnome.gov. "All About the Human Genome Project (HGP)." National Human Genome Institute, National Institutes of Health. http://www.genome.gov/ (accessed November 14, 2007)

Green, Ronald M. *The Human Embryo Research Debates: Bioethics in the Vortex of Controversy*. Oxford: Oxford University Press, 2001.

Habermas, Jürgen. *The Theory of Communicative Action*. Boston: Beacon Press, 1984.

——. *The Future of Human Nature*. Cambridge: Polity, 2003.

——. *Justification and Application: Remarks on Discourse Ethics*. Cambridge, Mass.: The MIT Press, 1994.

—— and Eduardo Mendieta. *Religion and Rationality: Essays on Reason, God, and Modernity*. Cambridge, Mass.: MIT Press, 2002.

Hardy, G. H. and C. P. Snow. *A Mathematician's Apology*. London: Cambridge University Press, 1967.

The Hastings Center. "Bioethics and the Public Interest." The Hastings Center. http://www.thehastingscenter.org/ (accessed November 14, 2007).

Healthvote.org. "Stem Cell Research: AdWatch." California HealthCare Foundation. http://www.healthvote.org/index.php/adwatch/C28/ (accessed November 14, 2007)

His Holiness the Dali Lama. *The Universe in a Single Atom: the Convergence of Science and Spirituality*. New York: Morgan Road Books, 2005.

Holland, Suzanne, Karen Lebacqz, and Laurie Zoloth, eds. *The Human Embryonic Stem Cell Debate Science, Ethics, and Public Policy*. Cambridge, Mass.: MIT Press, 2001.

The Holy Bible. New International Version. Nashville: Broadman & Holman Publishers, 1980.

Holton, Gerald. J. *Science and Anti-Science*. Cambridge, Mass.: Harvard University Press, 1993.

Jammer, Max. *Einstein and Religion: Physics and Theology*. Princeton, N.J.: Princeton University Press, 1999.

Johnson, G. Timothy. *Finding God in the Questions: a Personal Journey*. Downers Grove, Ill.: InterVarsity Press, 2004.

Jones, D. G. a. M. B., ed. *Stem Cell Research and Cloning: Contemporary Challenges to our Humanity*. Interface, 2004.

Kass, Leon and James. Q. Wilson. *The Ethics of Human Cloning*. Washington, D. C.: American Enterprise Institute, 1998.

Kaufmann, Adrian. "The Pro-Choice/Pro-Life Conflict: An Exploratory Study to Understand the Nature of the Conflict and to Develop Constructive Conflict Intervention Designs." Ph.D. diss., George Mason University, 1999.

Kuhn, Thomas. S. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press, 1970.

Lanza, Robert, John Gearhart, Brigid Hogan, and others, ed. *Essentials of Stem Cell Biology*. Burlington, Mass.: Elsevier Academic Press, 2006.

Lederach, John Paul. *Building Peace: Sustainable Reconciliation in Divided Societies*. Washington, D.C.: United States Institute of Peace Press, 1997.

Levi, A. W. *Humanism and Politics; Studies in the Relationship of Power and Value in the Western Tradition*. Bloomington, Ind., Indiana University Press, 1969.

——. *The Humanities Today*. Bloomington, Ind., Indiana University Press, 1970.

Lifton, Robert J. *The Nazi Doctors: Medical Killing and the Psychology of Genocide*. New York: Basic Books, 1986.

Lindberg, David C. and Ronald L. Numbers. *God and Nature: Historical Essays on the Encounter Between Christianity and Science*. Berkeley: University of California Press, 1986.

May, William E. *Catholic Bioethics and the Gift of Human Life*. Huntington, Ind.: Our Sunday Visitor, 2000.

McKibben, Bill. *The Comforting Whirlwind: God, Job, and the Scale of Creation*. Cambridge, Mass.: Cowley Publications, 2005.

Mendieta, Eduardo. *The Frankfurt School on Religion: Key Writings by the Major Thinkers*. New York: Routledge, 2005.

Morowitz, Harold. J. *The Emergence of Everything: How the World Became Complex*. New York: Oxford University Press, 2002.

—— and James. S. Trefil. *The Facts of Life: Science and the Abortion Controversy*. New York: Oxford University Press, 1992.

The National Bioethics Advisory Commission. "The National Bioethics Advisory Commission General Information." National Reference Center for Bioethics Literature at Georgetown University. http://bioethics.georgetown.edu/nbac/ (accessed November 14, 2007)

NIH Stem Cell Information. "Stem Cell Information." National Institutes of Health, U.S. Department of Health and Human Services. http://stemcells.nih.gov/index (accessed November 14, 2007).

Ozawa, Connie P. *Recasting Science: Consensual Procedures in Public Policy Making. Boulder*, Col.: Westview Press, 1991.

Pais, Abraham. *Subtle is the Lord: the Science and the Life of Albert Einstein*. Oxford: Oxford University Press, 1982.

Parson, Ann B. *The Proteus Effect: Stem Cells and their Promise for Medicine*. Washington, D.C.: Joseph Henry Press, 2004.

The Pew Forum on Religion & Public Life. "Bioethics." The Pew Research Center. The Pew Research Center. http://pewforum.org/bioethics/ (accessed November 14, 2007)

The Pew Research Center for the People & the Press. “GOP the Religion-Friendly Party, But Stem Cell Issue May Help Democrats.” The Pew Research Center. http://people-press.org/reports/ (accessed November 14, 2007)

Picoult, Jodi. *My Sister’s Keeper*. New York: Atria, 2004.

Polkinghorne, John. Exploring Reality: *The Intertwining of Science and Religion*. New Haven, Yale University Press, 2005.

Prentice, David. A. *Stem Cells and Cloning*. San Francisco: Benjamin Cummings, 2003.

The President’s Council on Bioethics. *Alternative Sources of Human Pluripotent Stem Cells*. Washington, D. C.: The President’s Council on Bioethics, 2005.

——. “Stem Cells: Recent Developments in Science and Policy.” The President’s Council on Bioethics. http://www.bioethics.gov/ (accessed November 14, 2007).

Reeve, Christopher. *Nothing is Impossible: Reflections on a New Life*. New York: Random House, 2002.

Richardson, L. F. *Statistics of Deadly Quarrels*. Pittsburgh: Boxwood Press, 1960.

Rubenstein, Richard E. *Aristotle’s Children: How Christians, Muslims, and Jews Rediscovered Ancient Wisdom and Illuminated the Dark Ages*. Orlando, Fla.: Harcourt, 2003.

——. *When Jesus Became God: the Epic Fight over Christ’s Divinity in the Last Days of Rome*. New York: Harcourt Brace & Co, 1999.

Rubin, Jeffrey Z., Dean G. Pruitt, and Sung Hee Kim. *Social Conflict: Escalation, Stalemate, and Settlement*. New York: McGraw-Hill, 1994.

Ruse, Michael and Christopher A. Pynes. *The Stem Cell Controversy: Debating the Issues*. Amherst, N.Y.: Prometheus Books, 2003.

Shelley, Mary W. and Maurice Hindle, ed. *Frankenstein or, the Modern Prometheus*. London: Penguin Books, 2003.

Smith, D. H. and C. B. Cohen. *A Christian Response to the New Genetics: Religious, Ethical, and Social Issues*. Lanham, Md.: Rowman & Littlefield Publishers, 2003.

Snow, C. P. *The Two Cultures and the Scientific Revolution. Cambridge: Cambridge University Press, 1959.*

——. Stanley Weintraub. *C. P. Snow, a Spectrum: Science, Criticism, Fiction*. New York: Scribner, 1963.

——. *Science and Government*. Cambridge, Mass.: Harvard University Press, 1961.

——. *The Two Cultures: and a Second Look*. Cambridge: Cambridge University Press, 1964.

Stark, Rodney and W. S. Bainbridge. *The Future of Religion: Secularization, Revival, and Cult Formation*. Berkeley: University of California Press, 1985.

Teilhard de Chardin, Pierre. *Christianity and Evolution*. New York: Harcourt Brace Jovanovich, 1971.

——. *The Phenomenon of Man*. New York: Harper, 1959.

The Templeton Prize Canyon Institute for Advanced Studies. "The Templeton Prize," John Templeton Foundation. http://www.templetonprize.org/ (accessed November 13, 2007)

Thale, Jerome and C. P. Snow. *C.P. Snow*. New York: Scribner, 1965.

Tredwell-Owen, Caspian, Alex Kurtzman, II, Roberto Orci. *The Island*. directed by Michael Bay. 136 min. DreamWorks SKG, 2005, DVD.

United States Council of Catholic Bishops Pro-Life Activities. "Cloning/Embryo Research/Stem Cell Research." United States Council of Catholic Bishops. http://www.usccb.org/prolife/issues/bioethic/index.shtml (accessed November 14, 2007)

Waters, Brent and Ronald Cole-Turner, eds. *God and the Embryo: Religious Voices on Stem Cells and Cloning*. Washington, D.C.: Georgetown University Press, 2003.

Williams, Bernard A. O. *Making Sense of Humanity and Other Philosophical Papers, 1982-1993*. Cambridge: Cambridge University Press, 1995.

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