Psychological Essentialism and Opposition to Human Embryonic Stem Cell Research

Kerry L. Macintosh
Santa Clara University School of Law, kmacintosh@scu.edu

Follow this and additional works at: http://digitalcommons.law.scu.edu/facpubs
Part of the Law Commons

Recommended Citation
18 J. of Tech. L. & Pol'y 229 (2013)
In 1998, James Thomson and other researchers at the University of Wisconsin reported success in deriving stem cell lines from human
embryos. Human embryonic stem cells (hESCs) have scientific and medical value because they are pluripotent and can develop into every cell type in the body. Scientists hope that these versatile cells will help them develop new drugs or tissues for transplantation.

But there is a dark lining to this silver cloud: scientists disaggregate and kill the embryo from which a hESC line is derived. This fact has elicited strong opposition from those who believe human embryos must be treated as human persons from the moment of conception. In their view, the medical promise of hESC research does not excuse killing embryos, and scientists should find alternative sources of stem cells.

Unfortunately, there is no perfect alternative to hESCs. Adult stem cells from bone marrow can transform into blood cells, cartilage, or bone, but are not pluripotent. Similarly, stem cells derived from amniotic fluid, which come from the fetus rather than the gestational mother, can differentiate into a variety of cell lineages. These cells are more versatile than adult stem cells but still are not pluripotent like hESCs.

---

2. Id. at 1146.
3. Id. at 1146–47.
4. Young Chung et al., Human Embryonic Stem Cell Lines Generated without Embryo Destruction, 2 CELL STEM CELL 113, 113 (2008). Advanced Cell Technology, Inc. (ACT) believes it has a technological way around this moral roadblock. Id. Pursuant to its patented method, scientists remove a single blastomere from an embryo, which is not destroyed but rather frozen. Id. The scientists then culture the blastomere into a hESC line. Id. ACT claims this method generates hESC lines at efficiencies comparable to those that scientists achieve when deriving lines from entire embryos. Id. However, even this method can be considered morally objectionable. See e.g., Mark Bradford, National Catholic Bioethics Center Statement on Proposed Method for Extracting Embryonic Stem Cells by Embryo Biopsy, CHRISTIAN NEWSWIRE, Aug. 25, 2006, available at http://www.christiannewswire.com/news/59452827.html. It depends upon the creation of embryos in the laboratory (an independent violation of human dignity) and subjects the embryo to a non-therapeutic action (the removal of the blastomere) that could be harmful. Id.
8. Paolo De Coppi et al., Isolation of Amniotic Stem Cell Lines with Potential for Therapy, 25 NATURE BIOTECHNOLOGY 100, 100 (2007) (explaining that the stem cells found in human amniotic fluid “can give rise to adipogenic, osteogenic, myogenic, endothelial, neurogenic and hepatic lineages”).
9. Dafni Moschidou et al., Valproic Acid Confers Functional Pluripotency to Human Amniotic Fluid Stem Cells in a Transgene-free Approach, 20 MOLECULAR THERAPY 1953,
There is one other option: transforming differentiated cells, such as skin cells, directly into induced pluripotent stem cells (iPSCs). Dr. Shinya Yamanaka, the man who pioneered this new science, has since won a Nobel Prize. Dr. Yamanaka's discovery suggests that doctors may one day be able to create stem cells or tissues matched to the DNA of individual patients. However, iPSCs pose some medical risks. In one experiment, researchers discovered that human iPSCs were riddled with genetic mutations. The researchers worried that the iPSCs could increase the odds of disease if transplanted into patients because the mutations they found are also associated with cancer and human genetic disorders. In another experiment, researchers gave mice iPSCs derived from cells of the same genetic type as the mice. The mice should have tolerated the genetically-matched transplants; instead, they suffered an immune response due to abnormal gene expression. Human iPSCs could also provoke an immune response if doctors transplanted them or tissues derived from them into patients.

Thus, experts who argue that hESC research remains necessary are
correct. Yet, over the past fifteen years, opposition to hESC research has impeded federal funding, discouraged scientists from entering the field, and led to the enactment of laws that criminalize the research.\textsuperscript{20}

To some, it may seem that this opposition is intractable. Professor John Robertson has said that there is "no way to argue around" the position that the embryo is a person with full moral standing.\textsuperscript{21} In other words, people believe what they believe, and that is that. However, this Article takes a different position. Progress is possible, but first the psychological roots of opposition to hESC research must be revealed.

This Article proceeds in four parts. Part I explains the basics of psychological essentialism in order to equip the reader with the background needed to understand the analysis to come. Part II reveals the link between essentialism and opposition to hESC research. More specifically, it documents evidence of essentialist intuition in Roman Catholic teachings and federal government reports. Next, Part III examines the connection between essentialism and policies and laws that restrict hESC research and its funding. Finally, this Article presents recommendations for promoting the legality and financial viability of hESC research.

\section{I. Psychological Essentialism}

Psychologists, anthropologists, and other social scientists have written countless books and articles about psychological essentialism, yet most lawyers are unfamiliar with the field. This Part I provides an overview.

\subsection{A. Natural and Living Kinds}

Psychological essentialism is a cognitive heuristic—that is, a mental rule of thumb that helps humans evaluate items or situations that humans encounter in the world.\textsuperscript{22} Douglas Medin and Andrew Ortony first described this heuristic more than twenty years ago.\textsuperscript{23} According to Medin and Ortony, humans act as if categories of things have a hidden


\textsuperscript{20} See infra Part III.


\textsuperscript{22} Macintosh, supra note 10, at 64.

\textsuperscript{23} Douglas Medin & Andrew Ortony, \textit{Psychological Essentialism, in Similarity and Analogical Reasoning} 179, 180 (Stella Vosniadou & Andrew Ortony eds., 1989).
Humans perceive this essence as causal: in other words, it is the reason things within the category possess the traits that they possess. Further, humans are attuned to surface traits that are linked to deeper, nonobvious properties, especially when humans evaluate things that belong to "natural kinds." Natural kinds include living kinds, such as animals or plants, and non-biological substances found in nature, such as water or precious metals.

In 2003, Professor Susan Gelman published her book, The Essential Child: Origins of Essentialism in Everyday Thought. Drawing on hundreds of social science experiments, Professor Gelman explains how adults, children, and even preschoolers exhibit patterns of behavior that are consistent with psychological essentialism, particularly when they evaluate living kinds. This Part I.1 offers a brief look at her findings, with emphasis on those that are relevant to the forthcoming analysis.

1. Belief in a Core

First, consistent with the central premise of essentialism, humans act as if living beings have a core that anchors them within their individual selves and within their kinds. For example, even young children grasp that the identity of an animal remains the same despite the passage of time and developmental changes. A caterpillar that becomes a butterfly as it grows remains the same individual. Adults treat living kinds as having strict boundaries, yet accept atypical members within these boundaries: penguins are birds even though they cannot fly. These reactions are consistent with essentialism: an individual either

24. Id. at 183–84.
25. Id. at 185–86.
26. Id. at 186. Some social scientists believe that humans also use psychological essentialism to make sense of artifacts—that is, man-made objects. See, e.g., Paul Bloom, Descartes' Baby: How the Science of Child Development Explains What Makes Us Human 55–57 (2004) (explaining that psychological essentialism does apply to artifacts); see Macintosh, supra note 10, at 103–05 (describing various theories about the applicability of psychological essentialism to artifacts). Since this Article examines psychological essentialism as it applies to living kinds, it will not address the essentialism of artifacts.
27. Macintosh, supra note 10, at 70.
29. Id. at 6. Professor Gelman is careful not to press too strong a claim. She recognizes that the experiments do not directly prove the existence of psychological essentialism. Id. at 59, 278. She also acknowledges that not all of the patterns of behavior are required in order for essentialism to exist. Id. at 88, 105.
30. Id. at 64.
31. Id. at 64–65.
32. Id. at 67–72.
does or does not have the essence required to belong to a kind, but whether it is typical of its kind is not determinative. Finally, when asked to categorize a creature, adults and young children rely upon what is “inside” that creature, rather than outward appearances, which may have been manipulated.

2. Belief that Reproduction Transmits Identity

Second, a wealth of experimental and anecdotal evidence shows that adults and young children expect living creatures, including human beings, to transmit category identity and associated traits to offspring at birth. This is an inheritance model of essence transmission, but other forms of transmission, such as via breast milk, are possible.

3. The Power of Induction

Third, Professor Gelman emphasizes the power of “category-based induction, or the inferences that people make from one category member to another, especially for hidden, unobservable properties.” Adults and young children readily use such induction to determine the traits of creatures or things that belong to natural kinds. For example, Professor Gelman cites an experiment in which children were taught that fish breathe underwater. When later told that a shark was a fish, the children correctly inferred that it could breathe underwater.

4. Reliance on Causal Factors

Fourth, when categorizing things, humans look to causation, just as the theory of essentialism predicts. For example, when asked to classify an imaginary object or creature, young children rely more on traits that experimenters describe as causes than on traits experimenters describe as effects. Moreover, when classifying a creature, adults and children tend to rely on causes that are inherent and internal—that is,
intrinsic to the organism and inside it.44

5. Hypothetical

To see how psychological essentialism works, consider a simple hypothetical. Suppose an individual, A, visits the home of a friend, B. A observes a furry quadruped with pointed ears, whiskers, and a long tail dozing on a windowsill in the sun. A has seen such traits (fur, quadruped, pointed ears, whiskers, long tail) and behaviors (dozing, affinity for sunny spots) before, in other creatures that A knew to be domestic cats. Accordingly, A infers that this creature is a cat. This reaction is not simple categorization. Rather, it rests on the instinct that there is a hidden “cat essence” that makes cats what they are and gives them the traits A has observed in this particular feline.

But that is not all. If this creature possesses cat essence, A can infer additional traits and behaviors that may be important. For example, suppose A already knows that cats have claws and can scratch, particularly when startled or handled by someone they do not know. So, even if this sleeping creature has sheathed her claws so that A cannot see them, A may be wary of picking her up.

To see what else essentialism can do, consider two variations on the hypothetical. First, imagine the creature dozing on the windowsill has no tail. This lack of a tail could be the result of an accident, or genetics if the creature belongs to the Manx breed of cat. Either way, A still senses that the creature carries cat essence, which makes it a cat, even if it is atypical when it comes to tails.

Second, imagine A returns to the home of A’s friend, B, several months later and finds that the creature that once dozed on the windowsill has given birth to four or five creatures. These newborn creatures have fur and are as small as rats. Their eyes are closed and their ears are tiny round flaps. Even if A has never seen a kitten before, A knows these creatures must be kittens, and not rats, because they were born of a cat and bear cat essence.

Now, suppose B offers to let A adopt one of these mewling balls of fur when it is weaned. Eight weeks later, A returns to pick up A’s new pet. By now the creature has changed: its eyes are open, it has large pointed ears, and it can jump, run, and play. These observable differences do not change the nature of the creature. It is still a kitten. It will continue to grow and develop into an adult member of its kind. Because it bears cat essence, it will not magically transform itself into a rat, bird, or dog.

Note that the hypothetical never identifies cat essence. The omission

44. Id. at 121.
is deliberate. The nature of cat essence—or whether such an essence even exists—does not matter. Psychological essentialism is not biological science.⁴⁵ Nor is it a philosophical theory about the true nature of things.⁴⁶ Rather, it is a heuristic. All humans need in order for it to work is a placeholder—that is, a vacant space that the human mind can complete with a belief or theory about what the essence is.⁴⁷

Further note that psychological essentialism allows the observer to draw inferences about the cat and her kittens quickly, intuitively, and without resort to logical deduction.⁴⁸ These qualities make the heuristic useful in everyday life; however, the heuristic does not always lead to accurate conclusions.⁴⁹

B. Essentialism and the Individual

In its classic formulation, psychological essentialism is a heuristic that humans use to evaluate members of natural kinds.⁵⁰ A cat bears essence of cat; a dog bears essence of dog; a horse bears essence of horse; and so on.

However, Professor Gelman argues that humans also rely upon essentialist intuitions when evaluating individuals as individuals.⁵¹ To give an example, from an essentialist perspective, President Barack Obama carries not only the essence of his kind (Homo sapiens), but also his own individual essence, which causes him to have the specific traits that he has. Since this sort of essentialism is also relevant to this analysis, a brief review is presented here.

⁴⁵. Domestic cats belong to the species Felis catus. See Anna Toenjes, Felis Catus, ANIMAL DIVERSITY WEB, http://animaldiversity.ummz.umich.edu/accounts/Felis-catus (last visited Nov. 1, 2013). Some readers might wonder if all members of that species possess a “cat genome” that serves as a true essence for the species. The answer is no. In modern biology, a species classification reflects the traits of a population, rather than individual members. See MACINTOSH, supra note 10, at 65. No single cat possesses the entire DNA of its species. Id. Furthermore, species change and evolve over the years. Id. Thus, there is no true and eternal essence to be found, even within a population. Id.

⁴⁶. Psychological essentialism is distinguishable from a discredited theory of philosophy, also known as essentialism, which holds that an object has an underlying true character or essence. See Medin & Ortony, supra note 23, at 183. This philosophical theory fails because the alleged essence changes depending on how the object is described. Id. Therefore, this Article does not propose that philosophical essences are real, but rather acknowledges that people sometimes act as if they are.

⁴⁷. Id. at 184–85.

⁴⁸. See GELMAN, supra note 28, at 7.

⁴⁹. For an extended analysis of how psychological essentialism has caused the public, the media, bioethicists, and politicians to misunderstand and mischaracterize animals and people born through cloning, see MACINTOSH, supra note 10.

⁵⁰. See Medin & Ortony, supra note 23, at 186.

⁵¹. See MACINTOSH, supra note 10, at 126.
How an individual essence is conceptualized depends on context. Often humans act as if “historical path” is the essence that makes the individual who he or she is.\textsuperscript{52} For example, the practice of assigning permanent names to babies at birth reflects a belief that identity can remain constant over time despite massive developmental changes.\textsuperscript{53} Moreover, one experiment has shown that adults are reluctant to match a name to a description that provides true physical details but false personal history.\textsuperscript{54} If an individual were asked to identify a tall, articulate black politician in his early fifties who was born in Munich and is Chancellor of Germany, the individual probably would be reluctant to identify that person as Barack Obama, no matter how much he resembled the President.\textsuperscript{55}

To explore another context, consider organ transplants. Often, an organ recipient acts as if he or she has assumed the traits, tastes, and personality of the donor.\textsuperscript{56} In other words, the recipient acts as if a body part, when transferred, has the power to ferry a causal essence from the donor to the recipient.\textsuperscript{57} If anyone asks, the recipient may attribute his or her experience to a soul, spirit, or energy that once pervaded the donor’s body and continues to exist in the organ after the transplant.\textsuperscript{58} In this context, the essence may not be construed as historical path \textit{per se}; but since the recipient acts as if the organ is capable of conferring acquired traits and tastes, the essence is still closely associated with historical path.\textsuperscript{59}

\section*{II. EMBRYONIC STEM CELL RESEARCH AND PSYCHOLOGICAL ESSENTIALISM}

Armed with this background, this Article now turns to consider the relation between psychological essentialism and opposition to hESC research. Part II examines two categories of evidence, one religious and one secular: Roman Catholic teachings and government reports. For

\begin{itemize}
\item \textsuperscript{52} \textit{Gelman}, supra note 28, at 151.
\item \textsuperscript{53} Id.
\item \textsuperscript{54} Id. (citing Robert J. Sternberg et. al, \textit{If You Changed Your Name and Appearance to Those of Elvis Presley, Who Would You Be? Historical Features in Categorization}, 111 AM. J. PSYCH. 327, 345–46 (1998)).
\item \textsuperscript{55} See Sternberg et. al, supra note 54, at 327 (reporting results of an experiment in which students were asked whether a person could be John F. Kennedy or other individuals who were well-known at the time of the experiment).
\item \textsuperscript{56} See \textit{Gelman}, supra note 28, at 60.
\item \textsuperscript{57} Id.; see also \textit{Macintosh}, supra note 10, at 127–30 (describing evidence of such experiences in greater detail).
\item \textsuperscript{58} See \textit{Gelman}, supra note 28, at 60.
\item \textsuperscript{59} See \textit{Macintosh}, supra note 10, at 129.
\end{itemize}
each category, Part II.A and Part II.B describe the nature of the arguments made against hESC research, and explain how the arguments are consistent with elements of psychological essentialism.

A. The Instructions of the Roman Catholic Church

The Roman Catholic Church includes multiple congregations in its administrative structure, including the Congregation for the Doctrine of the Faith (the Congregation). The Congregation has the duty "to promote and safeguard the doctrine on faith and morals in the whole Catholic world." Pursuant to this duty, the Congregation produces studies that provide a response to scientific and cultural innovations.

The Congregation has released two important instructions that address research conducted upon human embryos. These instructions are worth examining for two reasons. First, many politicians, academic experts, and voters are members of the Church. The instructions could influence their political as well as their religious views. Second, the instructions have repeated a fairly consistent message for the past twenty-five years. The persistence of the message over a sustained period of time increases the odds that it has had an influence.

1. Donum Vitae

In 1987, the Congregation released its Instruction on Respect for Human Life in its Origin and on the Dignity of Procreation, which is commonly known as Donum Vitae. Donum Vitae recalls Church teachings on abortion, which recognize that the life of a new human being begins when sperm fertilizes the egg. Next, the Congregation argues that recent biological discoveries have confirmed these teachings:

[I]n the zygote resulting from fertilization the biological identity

61. Id. art. 48.
62. See id. art. 49.
64. Compare DONUM VITAE, supra note 63, with DIGNITAS PERSONAE, supra note 6 ("Donum vitae was particularly significant. And now, twenty years after its publication, it is appropriate to bring it up to date.").
65. DONUM VITAE, supra note 63.
66. Id. part I.1, at 13.
of a new human individual is already constituted. Certainly no experimental datum can be in itself sufficient to bring us to the recognition of a spiritual soul; nevertheless, the conclusions of science regarding the human embryo provide a valuable indication for discerning by the use of reason a personal presence at the moment of this first appearance of a human life: how could a human individual not be a human person?\footnote{Id.}

Accordingly, the Congregation describes the respect due to the human embryo in these terms:

Thus the fruit of human generation, from the first moment of its existence, that is to say from the moment the zygote has formed, demands the unconditional respect that is morally due to the human being in his bodily and spiritual totality. The human being is to be respected and treated as a person from the moment of conception; and therefore from that same moment his rights as a person must be recognized, among which in the first place is the inviolable right of every innocent human being to life.\footnote{Id.}

Having insisted on this degree of respect, the Congregation takes a stance against research on human embryos and fetuses:

No objective, even though noble in itself, such as a foreseeable advantage to science, to other human beings or to society, can in any way justify experimentation on living human embryos or foetuses [sic], whether viable or not, either inside or outside the mother’s womb. \ldots

To use human embryos or foetuses [sic] as the object or instrument of experimentation constitutes a crime against their dignity as human beings having a right to the same respect that is due to the child already born and to every human person.\footnote{Id.}

Lastly, the Congregation affirms that these principles apply to human embryos created in vitro.\footnote{Id.} These too must be treated as human beings with dignity and a right to life from the beginning of existence.\footnote{Id.}

\footnotesize{67. \textit{Id.} The Congregation notes that the Magisterium has not affirmed the status of the embryo as a human person as a philosophical principle. \textit{Id.} Nevertheless, its rhetorical question implies that the embryo must be a person, because it could not possibly be less.}
\footnotesize{68. \textit{Id.} part 1.1, at 13–14.}
\footnotesize{69. \textit{Id.} part 1.4, at 17.}
\footnotesize{70. \textit{Id.} part 1.5, at 18.}
\footnotesize{71. \textit{Id.}}
The Congregation objects not only to the creation of human embryos in vitro for the purpose of research, but also to experiments that damage or endanger such embryos.\textsuperscript{72} The Congregation asserts that it is wrong to reduce a human being to a mere instrument for the benefit of others.\textsuperscript{73}

2. Dignitas Personae

In 2008, the Congregation issued the Instruction Dignitas Personae on Certain Bioethical Questions (Dignitas Personae).\textsuperscript{74} The purpose of Dignitas Personae was to address new scientific developments, particularly human embryo and stem cell research.\textsuperscript{75} Dignitas Personae begins with anthropological, theological, and ethical principles relevant to human life and procreation.\textsuperscript{76} Specifically, Dignitas Personae provides that “[t]he body of a human being, from the very first stages of its existence, can never be reduced merely to a group of cells. The embryonic human body develops progressively according to a well-defined program with its proper finality, as is apparent in the birth of every baby.”\textsuperscript{77}

Next, the Congregation reaffirms the ethical teaching expressed in Domum Vitae, namely, that a human being must be treated as a person from the time of conception and has the right to life.\textsuperscript{78} It opines that this teaching was grounded in “a truth of an ontological character . . . regarding the continuity in development of a human being.”\textsuperscript{79} The Congregation elaborates on this point as follows:

Indeed, the reality of the human being for the entire span of life, both before and after birth, does not allow us to posit either a change in nature or a gradation in moral value, since it possesses full anthropological and ethical status. The human embryo has, therefore, from the very beginning, the dignity proper to a person.\textsuperscript{80}

After applying these principles to evaluate various biotechnologies, the Congregation addresses hESC research.\textsuperscript{81} It asserts that it is “illicit” to obtain stem cells from a living human embryo, because doing so kills

\textsuperscript{72} Id.
\textsuperscript{73} Id.
\textsuperscript{74} DIGNITAS PERSONAE, supra note 6.
\textsuperscript{75} Id. \textsection 1.
\textsuperscript{76} Id. \textsection 4.
\textsuperscript{77} Id.
\textsuperscript{78} Id.
\textsuperscript{79} Id. \textsection 5.
\textsuperscript{80} Id.
\textsuperscript{81} Id. \textsection 32.
the embryo. Thus, to avoid cooperation in evil and scandal, researchers have a duty to refuse to use stem cells that others have derived through illicit means.

3. Catholic Instructions and Biology

*Donum Vitae* and *Dignitas Personae* rely on biology in explaining why the embryo must be treated as a human person. For example, in *Donum Vitae*, the Congregation claims the biological identity of a new human individual is present in the zygote. However, the facts are more complex than the Congregation’s explanation. A zygote may produce one, two, three, or more individuals, depending on whether it splits in the course of embryonic development. More bizarrely, chimerism may occur where two zygotes combine and produce a human individual, who will have some cells bearing the genome of one zygote and other cells bearing the genome of the other. Furthermore, even in cases where a single zygote produces a single individual, it is not true that the entire biological identity of the individual is present in the zygote. The individual evolves over time due to environmental interactions and genetic mutations that occur during embryonic development or after birth.

In *Dignitas Personae*, the Congregation argues that the human embryo cannot be characterized as simply a cluster of cells because it has the capacity to develop into a baby. It does not, however, acknowledge the striking fact that up to seventy-five percent of human embryos are lost before birth, primarily due to chromosomal abnormalities. In other words, most human embryos do not have the potential to become babies, whether they originate in the lab or not.

In short, the Catholic instructions do not adequately describe biological reality. However, as Part II.A.4 will demonstrate, the

---

82. Id.
83. Id. ¶¶ 32, 35.
84. DONUM VITAE, supra note 63, at 13.
86. Id. at 158–59.
87. See id. at 158 (“[P]eople are not determined solely by their genotype. DNA does not exist in a vacuum; it interacts with the environment, and this interaction also plays a role in shaping development and identity.”); see also AUDREY CHAPMAN, UNPRECEDENTED CHOICES: RELIGIOUS ETHICS AT THE FRONTIERS OF GENETIC SCIENCE 177 (1999) (“Human development features a continuous and ongoing interaction between the organism and the environment throughout life that influences express of genes and the development of the brain.”).
88. See Molhoek, supra note 85, at 159.
89. See DIGNITAS PERSONAE, supra note 6, ¶ 4.
instructions are consistent with psychological habits of perception.

4. Catholic Instructions and Essentialism

In *Donum Vitae*, the Congregation suggests that the new human individual present in the zygote marks the presence of something greater, namely, a human person with a soul, and consequently, human rights. The Congregation makes this suggestion not because it has scientific proof, but because the alternative is unthinkable: a human individual without a soul. But what makes the alternative so unthinkable?

The human mind intuits that each individual carries an essence that anchors his or her identity across time and physical transformation. If the zygote is associated with a single human individual, intuition thus leads to the conclusion that this individual must have an essence (soul). The alternative conclusion—that the zygote has no essence (soul) at all—is simply too counterintuitive for the Congregation to accept.

Now, suppose a particular zygote is associated, not with a single human individual, but with two (twins), three (triplets), four (quadruplets), or more individuals. Or suppose a single zygote represents only half of a human chimera. If a single zygote is associated with multiple individuals, or only part of an individual, does that mean it has multiple or partial essences (souls) at conception? The very idea is jarring, probably because the mind is conditioned to assume that an individual biological entity has a single essence. Had the Congregation acknowledged such complex biological scenarios, the patent mismatch between fact and intuition would have deprived *Donum Vitae* of much of its rhetorical power.

Moving on to *Dignitas Personae*, the Congregation characterizes the developmental progression from conception to birth as an ontological truth—one that proves the embryo deserves to be treated as a human person. Is this logic, or is it intuition masquerading as a deeper wisdom?

Recall some of the key elements of psychological essentialism discussed in Part II. Living beings maintain their identities even if their bodies undergo developmental transformations over time. Moreover, even though a kind has strict boundaries, atypical members are

---

91. See *Donum Vitae*, supra note 63, § I.1, at 13
92. Id.
93. See supra Part I.B.
94. Id.
95. See *Dignitas Personae*, supra note 6, ¶¶ 4–5.
96. See *Gelman*, supra note 28, at 64–65.
accepted. Essence anchors members within a kind despite their outward appearances. It causes their development and characteristics.

Elements such as these are consistent with Dignitas Personae. If a human embryo and human baby share a common human essence, then they belong to the same kind despite obvious differences in their appearances and abilities. The human embryo may not be a typical member of the kind, but that does not matter. Moreover, if embryos and babies have the same essence, it makes intuitive sense to treat them all as persons. Thus, destruction of even the tiniest bearer of human essence becomes an immoral act.

Here again, the facts of early embryonic development clash with intuition. If a single embryo fails to implant or miscarries, that loss can be interpreted as the premature death of a being that possesses human essence. However, if the vast majority of embryos are fated to fail, the sheer magnitude of these losses challenges the premise that there is biological continuity from conception to birth. Rather, biological discontinuity is the reality. It is difficult to reconcile this reality with instinct. If an embryo acquires human essence somewhere along the path to birth, that sudden change contradicts the principle of stability across time and transformation.

Overall, Catholic teachings are more consistent with essentialist intuition than biological fact. This conclusion may not be surprising. Some academics believe psychological essentialism evolved as an adaptive mechanism to help human beings understand and interact with the living creatures found in the environment. Intuitions developed for such purpose may lead humans astray when extended to embryos that forbearers could not observe or understand in their biological complexity.

B. Government Reports

Religion is not the only realm in which one can find essentialism. Secular governments often establish blue-ribbon commissions to report on pressing issues. For example, during the Presidency of George W.

97. Id. at 67–72.
98. Id. at 75–83.
100. See MACINTOSH, supra note 10, at 73–77 (summarizing various theories that pertain to the evolution of psychological essentialism).
101. For example, President Barack Obama established a Presidential Commission for the Study of Bioethical Issues (the Commission) to advise him on bioethical problems stemming from biomedical and technological advances. See PRESIDENTIAL COMMISSION FOR THE STUDY OF BIOETHICAL ISSUES, http://www.bioethics.gov (last visited Nov. 4, 2013) [hereinafter BIOETHICAL PRESIDENTIAL COMMISSION]. However, as of the date of this Article’s publication,
Bush, an advisory group known as the President’s Council on Bioethics (the Council) released two reports that examined the ethics of hESC research. This Part II.B examines those portions of the reports that address the moral standing of human embryos.

1. Human Cloning and Human Dignity: An Ethical Inquiry

The Council issued the first of these reports in 2002. The report, entitled Human Cloning and Human Dignity: An Ethical Inquiry (the Human Cloning Report), discussed both the cloning of babies (reproductive cloning) and the cloning of human embryos for stem cell research (research cloning). Council members were united in recommending that Congress ban reproductive cloning. However, they split on research cloning. A ten-member majority recommended Congress impose a four-year moratorium, during which the federal government would study the issues raised by human embryo research and related technologies. A seven-member minority recommended that research cloning be allowed to continue within a national regulatory structure.

This Article focuses on opposition to hESC research, and thus, the argument against research cloning provided in the Human Cloning Report.

---

the Commission has not issued reports on stem cell research. See Projects, PRESIDENTIAL COMMISSION FOR THE STUDY OF BIOETHICAL ISSUES, http://www.bioethics.gov (last visited Nov. 4, 2013). Perhaps it has failed to act because President Obama already has well-developed opinions on the subject and considers such reports unnecessary. President Obama wasted no time in directing the National Institutes of Health (NIH) to issue guidelines making federal funds available to support hESC research. See National Institutes of Health Guidelines on Human Stem Cell Research, 74 Fed. Reg. 32,170 (July 7, 2009) [hereinafter NIH Guidelines]; see also Exec. Order No. 13505, 74 Fed. Reg. 46, 10667–68 (Mar. 9, 2009). For more information on the Commission and its work, see BIOETHICAL PRESIDENTIAL COMMISSION, supra.


103. See HUMAN CLONING REPORT, supra note 102.
104. Id.
105. Id. at 205, 218.
106. Id. at 218, 227.
107. Id. at 205, 227.
108. Id. at 218, 227. Ultimately, the Council’s recommendation that Congress should ban the cloning of human embryos for stem cell research fell on deaf ears. See KERRY LYNN MACINTOSH, ILLEGAL BEINGS: HUMAN CLONES AND THE LAW 76 (2005) (citing Sheryl Gay Stolberg, Legislation to Ban Cloning Stalls in Senate, S.F. CHRON., June 14, 2002, at A3). Although the House of Representatives passed a bill to ban human cloning for any purpose twice, both times the legislation failed in the Senate. Id. at 76–77.
The argument against research cloning begins with a passionate defense of the human embryo, whether the embryo is cloned or not. The argument against research cloning begins with a passionate defense of the human embryo, whether the embryo is cloned or not.  

a. Developmental Potential and Human Essence

There are two rhetorical threads running throughout the Human Cloning Report. This passage captures the first thread:

The cell synthesized by somatic cell nuclear transfer, no less than the fertilized egg, is a human organism in its germinal stage. It is not just a "clump of cells" but an integrated, self-developing whole, capable (if all goes well) of the continued organic development characteristic of human beings.

This reasoning mirrors that in Dignitas Personae. The Human Cloning Report emphasizes developmental potential: the human embryo can become a human baby; other cell clusters cannot. The question is why this potential should lead to the conclusion that the embryo and baby have the same moral status, despite the striking differences in phenotype and capabilities.

One could make the argument for the significance of potential in utilitarian terms: the embryo is more valuable than a clump of cells because it can become a human being who can contribute to society. However, the Human Cloning Report does not take that approach. Instead, it seems to value potential for its own sake.

To decipher the role of potential, one must read further:

To be sure, the embryo does not yet have, except in potential, the full range of characteristics that distinguish the human species from others, but one need not have those characteristics in evidence in order to belong to the species. And of course human beings at some other stages of development—early in life, late in life, at any stage of life if severely disabled—do not forfeit their humanity simply for want of these distinguishing


110. Id. at 152–53. As the report proceeds, it makes various arguments specific to research cloning, including the claim that research cloning will inevitably lead to reproductive cloning. Id. at 165.

111. Id. at 152–53.

112. See DIGNITAS PERSONAE, supra note 6, ¶ 4.

113. See HUMAN CLONING REPORT, supra note 102, at 152–53.
characteristics.\textsuperscript{114}

This passage expresses an idea that is consistent with psychological essentialism: living kinds have strict boundaries, but even atypical members are included.\textsuperscript{115} Indeed, the *Human Cloning Report* makes this very point, but more explicitly, by stating that:

An embryo is, by definition and by its nature, potentially a fully developed human person; its potential for maturation is a characteristic it \textit{actually} has, and from the start. The fact that embryos have been created outside their natural environment—which is to say, outside the woman’s body—and are therefore limited in their ability to realize their natural capacities, does not affect either the potential or the moral status of the beings themselves. A bird forced to live in a cage its entire life may never learn to fly. But this does not mean it is less of a bird, or that it lacks the immanent potentiality to fly on feathered wings. It means only that a caged bird—like an in vitro human embryo—has been deprived of its proper environment.\textsuperscript{116}

In other words, the developmental potential of the embryo is a trait from which one can infer the presence of a human essence. The embryo in a lab dish may be an atypical member of the species, but that does not matter; it is still a human being because essence anchors it within its kind.

The authors of the *Human Cloning Report* do not appear to recognize the manner in which essentialism has influenced their reasoning. Perhaps that is not surprising; the heuristic can function at a subconscious level. It allows the authors to use a known trait, developmental potential, to spot human essence in the embryo; from there, they can draw inferences about other traits, such as moral value, without ever acknowledging the intuitions underlying their conclusions. All of this can happen without ever identifying what the mysterious human essence is because the heuristic can function even if no essence is identified.

To be sure, the *Human Cloning Report* is inconsistent with classic essentialism in one respect: it discusses whether the product of cloning deserves to be called an embryo, despite its unusual origins.\textsuperscript{117} Ordinarily, the male and female of a living kind transmit the essence of

\textsuperscript{114} Id. at 153.
\textsuperscript{115} See GELMAN, supra note 28, at 67–72.
\textsuperscript{116} HUMAN CLONING REPORT, supra note 102, at 156.
\textsuperscript{117} Id. at 46.
their kind to offspring through sexual reproduction.\textsuperscript{118} Human embryos generated through sexual intercourse or in vitro fertilization (IVF) fit this paradigm; however, human embryos generated through cloning, which may be described as asexual reproduction, do not.\textsuperscript{119} Therefore, the Council could have concluded that the latter lack human essence. Instead, it chooses to apply the term "cloned embryo" on functional grounds: that is, because the product of cloning has developmental potential.\textsuperscript{120} To put it another way, the intuition that developmental potential reflects the presence of a deeper, hidden essence overrides the intuition that sexual reproduction is required for the transmission of essence.

b. Continuity and Individual Essence

The \textit{Human Cloning Report} does not select developmental potential as its only touchstone. It also emphasizes the continuity of the human individual and his or her history, from embryonic origin through death:

We may observe different points in the life story of any human being—a beginning filled mostly with potential, a zenith at which the organism is in full flower, a decline in which only a residue remains of what is most distinctively human. But none of these points is itself the human being. That being is, rather, an organism with a continuous history. From zygote to irreversible coma, each human life is a single personal history.\textsuperscript{121}

Note the emphasis on the continuous personal history of a specific human being. This emphasis appears again where the \textit{Human Cloning Report} asserts:

The mystery that surrounds the human embryo is undeniable. But so is the fact that each human person began as an embryo, and that this embryo, once formed, had the unique potential to become a unique human person. . . . Justifying our intention of using (and destroying) human embryos for the purpose of biomedical research would force us either to ignore the truth of our own continuing personal histories from their beginning in embryonic life or to weaken the commitment to human equality.

\textsuperscript{118} See GELMAN, \textit{supra} note 28, at 89–95.
\textsuperscript{119} See \textit{HUMAN CLONING REPORT}, \textit{supra} note 102, at 50 (citing the argument that the product of cloning cannot be an embryo because it does not come from the uniting of sperm and egg).
\textsuperscript{120} \textit{Id.} at 51.
\textsuperscript{121} \textit{Id.} at 153.
that has been so slowly and laboriously developed in our cultural
history.\textsuperscript{122}

Professor Robertson has criticized the Council’s emphasis on
continuity of the individual person as a rhetorical device that does not
explain why DNA should confer rights or duties.\textsuperscript{123} Professor Robertson
is correct that the rhetoric is “blatantly essentialist,”\textsuperscript{124} but he does not
identify the type of essentialism involved.

Like \textit{Donum Vitae}, these passages in the \textit{Human Cloning Report}
focus on a unique individual essence rather than human essence more
generally. As explained in Part II above, many people act as if the
history of an individual person is a powerful, hidden essence that lies at
the root of his or her identity. Here, the key question is when that
history begins. To the authors of the \textit{Human Cloning Report}, the
continuum of biological development suggests a continuous personal
history, one that begins at conception rather than birth.\textsuperscript{125} However, if
one unconsciously accepts the premise that all human individuals
possess unique essences at conception, a legal regime that subjects some
essence-bearers to destructive research for the benefit of other essence-
bearers will appear to run counter to the principle of human equality.

The \textit{Human Cloning Report}’s use of the word “truth” supports this
analysis.\textsuperscript{126} The word “truth” suggests a powerful intuition at work: an
unspoken instinct that silently and invisibly invests certain facts, in this
case, the biological continuum from conception to birth, with deeper
meaning and significance.

2. Monitoring Stem Cell Research

In 2004, the Council released a new report entitled \textit{Monitoring Stem
Cell Research} (the \textit{Stem Cell Report}).\textsuperscript{127} The \textit{Stem Cell Report} describes
federal policy,\textsuperscript{128} ethical and policy debates, and scientific

\begin{footnotes}
\textsuperscript{122.} \textit{Id.} at 157–58.


\textsuperscript{124.} Robertson, \textit{supra} note 123, at 20.

\textsuperscript{125.} \textit{See HUMAN CLONING REPORT, supra} note 102, at 153.

\textsuperscript{126.} \textit{Id.} at 158.

\textsuperscript{127.} \textit{STEM CELL RESEARCH REPORT, supra} note 102.

\textsuperscript{128.} \textit{Id.} at 63–74. Part III presents a discussion of the Bush Administration’s policy regarding the federal funding of hESC research.
\end{footnotes}
developments related to stem cell research.\textsuperscript{129} For purposes of this Part II.B.2, the report’s discussion of the moral standing of the human embryo is most relevant.\textsuperscript{130}

In setting out the argument for the full personhood of the embryo, the \textit{Stem Cell Report} states:

Many of those who seek to defend human embryos base their case on some form of the argument for biological continuity and sameness through time. For example, they argue that a human embryo is an organic whole, a living member of the human species in the earliest stage of natural development, and that, given the appropriate environment, it will, by self-directed integral organic functioning, develop progressively to the next more mature stage and become first a human fetus and then a human infant. Every adult human being around us, they argue, is the same individual who, at an earlier stage of life, was a human embryo. We all were then, as we still are now, distinct and complete human organisms, not mere parts of other organisms.\textsuperscript{131}

This argument presents the same two themes that appear in the \textit{Human Cloning Report}: developmental potential and continuity of personal history. As explained in Part II.B.1, the emphasis on developmental potential reflects a belief that every human embryo possesses the essence of its kind. The focus on continuity of personal history reflects an intuition that a unique individual essence is present in every human embryo.

The \textit{Stem Cell Report} builds on this argument to reach a rigid conclusion: "[I]f one’s guiding premise is that all human persons possess equal moral standing—regardless of their particular powers, size, or appearance—then there are no grounds for denying the earliest human embryo full moral standing as a person."\textsuperscript{132} In other words, if all humans possess human essence and belong to their kind, regardless of their abilities, size, or phenotypes, then the least among them, including human embryos, must be accorded full moral standing.

The \textit{Stem Cell Report} also presents "the case for meaningful discontinuity and developing moral status."\textsuperscript{133} As it explains:

\begin{quote}
Many other observers, however, argue that some biologically and morally significant discontinuities do in fact present
\end{quote}

\textsuperscript{129} \textit{See id. at x–xi.}
\textsuperscript{130} \textit{Id. at 74–93.}
\textsuperscript{131} \textit{Id. at 76.}
\textsuperscript{132} \textit{Id. at 77.}
\textsuperscript{133} \textit{Id. at 78.}
themselves in the course of early human development. . . . They suggest that the developing human organism might become (at once or progressively) deserving of protection as it becomes able to feel pain, or to exhibit neural activity, or rudimentary features of consciousness, or some elements of the human form, or the capacity to function independently—or as it progressively exhibits more and more of these or other criteria. Until that time, many argue, a developing human deserves some respect because of what it might become, but not protection on par (or nearly so) with that afforded to fully human subjects.\textsuperscript{134}

From a psychological point of view, it is easy to see why this discontinuity argument does not persuade opponents of hESC research. It suggests that an embryo or fetus can acquire a human essence as development progresses, and that capacity for pain, neural activity, consciousness, physical form, and independent function signal the emergence of essence.\textsuperscript{135} But according to classic psychological essentialism, essence is not something that builds over time; rather, it is stable across time and physical transformation and atypical members of a kind, like embryos, still belong to that kind.\textsuperscript{136}

The \textit{Stem Cell Report} goes on to note that the primitive streak, the future locus of the spine, appears at the fourteenth day after the first cell division of the embryo.\textsuperscript{137} Some proponents of hESC research consider this event significant because it marks the point after which twinning does not occur—a fact that suggests an individual person has come to exist.\textsuperscript{138} In other words, these proponents reject the zygote as a single biological individual because they understand that a zygote can become one, two, three, or more individuals. However, once the primitive streak appears, there is a true individual capable of creating a personal history to serve as individual essence—an individual who must be respected.

Again, from a psychological perspective, it is easy to see why hESC opponents do not find this argument persuasive. It implies that a biological entity with a distinct human genome, the zygote, can exist without possessing an individual essence. In other words, the argument implies that a human individual can exist for fourteen days without a human soul—the very idea that so troubled the authors of \textit{Donum Vitae}.

Interestingly, the \textit{Stem Cell Report} also notes that many who reject the claim of the embryo to full personhood nevertheless speak of the

\begin{itemize}
  \item \textsuperscript{134} \textit{Id.} at 78–79.
  \item \textsuperscript{135} \textit{See id.} (emphasizing the importance of these traits).
  \item \textsuperscript{136} \textit{See Gelman, supra} note 28, at 64–65, 67–72.
  \item \textsuperscript{137} \textit{See Stem Cell Research Report, supra} note 102, at 79.
  \item \textsuperscript{138} \textit{Id.} at 79–80.
\end{itemize}
special respect due to the embryo.\textsuperscript{139} It must be “treated as more than a mere object or collection of somatic cells in tissue culture.”\textsuperscript{140} More than a thing, but less than a person, the embryo may be killed, but only for good reasons.\textsuperscript{141} Opponents challenge this position as incoherent; one does not respect an entity by destroying it for research.\textsuperscript{142}

Evidently, proponents of hESC research intuit that embryos bear some quantum of human essence that is worthy of respect. However, this intuition must be relatively weak because proponents go on to conclude that embryos may be destroyed in order to achieve scientific and medical benefits.\textsuperscript{143} Meanwhile, opponents, who have stronger essentialist instincts, are firm in their resolve that destruction of the embryos can never be justified.\textsuperscript{144} Yet, neither side acknowledges that the heuristic of psychological essentialism exists, let alone that it might have influenced the discussion.

III. THE LAW AND PSYCHOLOGICAL ESSENTIALISM

Whether the human embryo has moral standing is more than a religious or philosophical question; it is a public policy and legal question. As this Part III will show, those who believe the human embryo deserves full moral standing have worked tirelessly to block federal funding for hESC research and halt the creation of hESC lines. After describing these developments, this Part III will link them to essentialism.

A. Federal Law

Human ESC research is legal at the federal level.\textsuperscript{145} It is likely to remain so, since sixty-two percent of the American public supports it.\textsuperscript{146} Still, a new science needs more than a tolerant legal regime; it needs money for basic research. Private investors are reluctant to fund work that does not offer financial return. Government funding is necessary, and the federal government has the deepest pockets.\textsuperscript{147}

Opponents have done all they can over the past fifteen years to

\begin{itemize}
  \item \textsuperscript{139} Id. at 82.
  \item \textsuperscript{140} Id. at 82–83.
  \item \textsuperscript{141} Id.
  \item \textsuperscript{142} Critics of hESC research are fond of making the point that destroying an embryo is the opposite of respecting an embryo. Id. at 82.
  \item \textsuperscript{143} Id. at 83–84.
  \item \textsuperscript{144} Id. at 76–78.
  \item \textsuperscript{145} STEM CELL RESEARCH REPORT, supra note 102, at 3–4.
  \item \textsuperscript{146} MACINTOSH, supra note 10, at 203.
  \item \textsuperscript{147} Robertson, supra note 21, at 194.
\end{itemize}
stymie the federal funding of hESC research. This Part III.A.1 examines the opponents’ efforts through an essentialist lens.

1. Dickey-Wicker Amendment

Since 1996, the U.S. Congress has enacted a rider to every appropriations bill for the Department of Health and Human Services.\footnote{148} The rider, known as the Dickey-Wicker Amendment, restricts the Department’s ability to fund research involving human embryos.\footnote{149} The precise language of the Dickey-Wicker Amendment has varied slightly over the years, but the 2012 version offers a good example.\footnote{150} It provides that funds may not be used for “the creation of a human embryo or embryos for research purposes[] or research in which a human embryo or embryos are destroyed, discarded, or knowingly subjected to risk of injury or death greater than that allowed for research on fetuses in utero” under federal regulations and the Public Health Service Act.\footnote{151}

The legislative history of the original Dickey-Wicker Amendment is sparse and relatively uninformative.\footnote{152} However, another legislative event close in time to the original enactment provides a good sense of the motivations behind the Amendment. In 1996, shortly after the Dickey-Wicker Amendment became law, Representative Nita Lowey (D-New York) and Representative Nancy Johnson (R-Connecticut) proposed eliminating it.\footnote{153} Their goal was to allow the federal government to fund medical research conducted on spare embryos that IVF patients no longer needed for their treatment.\footnote{154} Ultimately,
however, the proposal failed\textsuperscript{155} and Dickey-Wicker survived.

The floor debate on the Lowey/Johnson proposal is worth examining because it yields insights into the mindset of those who supported the Dickey-Wicker Amendment when it was new.\textsuperscript{156} One of the speakers was none other than Representative Jay Dickey (R-Arkansas), one of two original sponsors after whom the Dickey-Wicker Amendment was named. Consider Representative Dickey's statement:

\begin{quote}
[The Lowey/Johnson proposal] is not a bill about research or science; it is an attack on the sanctity of life. It is an attack on the moral conscience of our Nation. . . .

. . . .

We might hear in this discussion that there is a spare-embryo circumstance. There are no spare embryos when these are lives. We cannot allow Federal funds to be used to terminate lives . . . .\textsuperscript{157}
\end{quote}

Note how Representative Dickey equated embryos with born persons by describing them as "lives." Representative Chris Smith (R-New Jersey) made the same equation but in more specific terms:

There is no question that interesting information could be obtained by cutting up living human embryos to see what makes them tick. This is also true of unborn children at all stages of gestation, newborn babies, 3-year-olds and adults. Many things can also be learned from experiments on cadavers or on animals, but for some purposes there is just no substitute for cutting up living human beings.

If researchers could only be allowed to set aside certain individuals for these purposes, the rest of us might deserve some benefit, or so the argument goes. Yet somehow deep down all of us know that this is wrong.\textsuperscript{158}

Representative Henry Hyde (R-Illinois) further embellished the point.\textsuperscript{159} Representative Hyde objected to abortion, embryo research, and Marxism on the ground that all deny the intrinsic worth of a human being.\textsuperscript{160} As Representative Hyde stated, "the problem is our colleagues are talking about living human beings, albeit tiny and microscopic, but

\begin{footnotesize}
\begin{enumerate}
\item \textsuperscript{155} 142 CONG. REC. 16,890 (1996).
\item \textsuperscript{156} See id. at 16,864–90.
\item \textsuperscript{157} Id. at 16,865.
\item \textsuperscript{158} Id. at 16,866.
\item \textsuperscript{159} Id. at 16,869.
\item \textsuperscript{160} Id.
\end{enumerate}
\end{footnotesize}
size surely does not make a difference . . . "  
Taken together, these three statements emphasize the sameness of all human beings, despite size, developmental stage, and age. This emphasis is consistent with psychological essentialism; living creatures, in this case, human beings, retain their identities and category membership despite developmental changes and/or variations in outward appearance.  
Significantly, Representative Hyde appealed to "intrinsic worth" in describing what links all human beings. Black’s Law Dictionary defines the word “intrinsic” as “[b]elonging to a thing by its very nature; not dependent on external circumstances; inherent; essential.” Thus, Representative Hyde’s appeal to intrinsic worth is consistent with the intuition that a common essence binds all humans.

2. The Bush Policy

Early in his first term, President George W. Bush had to decide whether to make federal funds available for hESC research. On August 9, 2001, President Bush issued a long statement in which he described his consultations with scientists and ethicists and pondered the ethical dilemmas that the new science posed. President Bush stated, “Research on embryonic stem cells raises profound ethical questions, because extracting the stem cell destroys the embryo, and thus destroys its potential for life. Like a snowflake, each of these embryos is unique, with the unique genetic potential of an individual human being.”

However, President Bush noted that private researchers had already established more than sixty hESC lines. The existence of these lines prompted the former President to embrace the following policy:

I have concluded that we should allow federal funds to be used for research on these existing stem cell lines, where the life and death decision has already been made.

Leading scientists tell me research on these 60 lines has great

161. Id.
162. See supra text accompanying notes 30–34.
163. See supra text accompanying note 160.
164. BLACK’S LAW DICTIONARY 899 (9th ed. 2009) (emphasis added).
165. See STEM CELL RESEARCH REPORT, supra note 102, at 28.
167. Id.
168. Id.
promise that could lead to breakthrough therapies and cures. This allows us to explore the promise and potential of stem cell research without crossing a fundamental moral line, by providing taxpayer funding that would sanction or encourage further destruction of human embryos that have at least the potential for life.169

From a scientific point of view, this policy was devastating. It meant that federal funding was available only for a limited number of hESC lines, many of which had been cultured on murine cells and were of questionable quality.170 However, from a psychological point of view, this policy is interesting because it reflects an essentialist mindset.

In his statement, President Bush noted that an embryo has a unique genome.171 This fleeting reference suggests an intuition that an embryo has its own individual essence although the idea is not fully developed in the statement.

The more dominant theme is that the federal government must proceed carefully because the human embryo has the potential for life.172 As discussed in Part II, the developmental potential of the embryo serves as a marker for human essence. President Bush recoiled from taking any action that would encourage the destruction of bearers of human essence.173 Rather, President Bush left to private companies the "life and death decision"—a telling choice of words that equates embryos with born persons who can die.174

3. Congress and Funding

Five years after the Bush policy was first articulated, Congress tried to override it.175 In 2006, Congress approved legislation that would have made funding available for research conducted on stem cell lines derived from spare IVF embryos, regardless of when the lines were derived.176 President Bush vetoed the legislation.177 In 2007, Congress passed similar legislation, and Bush vetoed it again.178

169. Id.
170. See Robertson, supra note 21, at 195.
171. See President Bush, Remarks, supra note 166.
172. Id.
173. Id.
174. Id.
176. See id.
177. See H.R. 810, 109th Cong. (2006) (final as passed in House and Senate); 152 CONG. REC. H5435 (daily ed. July 19, 2006) (reporting Bush veto); see also Robertson, supra note 123, at 3.
178. S. 5, 110th Cong. (2007) (final as passed in House and Senate); 153 CONG. REC.
A sense of the perspectives and strategies on both sides can be gleaned from the floor debate on the 2007 legislation. Lawmakers who supported the legislation made their arguments in utilitarian terms, emphasizing the scientific and medical benefits of hESC research. Lawmakers who opposed the legislation disputed the claim that hESC research would lead to cures; however, at its core, their opposition rested on the belief that hESC research was immoral. Even though the opponents lost the vote in 2007, their statements are worth examining because they provide further evidence that essentialism has influenced congressional work in the field.

a. Developmental Potential and Human Essence

First, lawmakers who opposed the 2007 legislation complained that hESC research involved the destruction of human life and asserted that an embryo was a member of the human species. By staking a claim to the membership of embryos within humankind, the lawmakers implicitly claim for the embryos a human essence, rendering them equal


181. See text accompanying notes 183–86.


with born persons.

Moreover, Representative Bart Stupak (D-Michigan) stated, "Embryonic stem cell research requires the killing of human embryos, which if left to grow would become children." Representative Lee Terry (R-Nebraska) queried, "If embryos are not fundamentally human lives, how can you explain the fact that frozen embryos from in vitro fertility clinics grow into children once they are implanted in a woman's womb?" The developmental progression from embryo to child serves as an indication that human essence is present; the presence of human essence permits the inference of other traits, such as the same moral value that all humans possess.

b. Continuity and Individual Essence

Second, lawmakers who opposed the legislation also characterized embryos as unique individuals. For example, Senator Sam Brownback (R-Kansas) argued that embryology books defined the embryo as a unique person with forty-six chromosomes. Senator Brownback illustrated the point with photos of a toddler named Hannah by explaining,

I met Hannah. She has been in my office. She is a bright, young, vivacious girl. I point out that she starts out as what we are talking about researching on here—she starts out being frozen, alive, adopted as an embryo, arrives in a clinic, is thawed, implanted [sic], and develops a heartbeat. Here is a picture of her at 21 weeks. We can see her, and we can see the development.

Senator Brownback means to suggest that the frozen embryo and Hannah, the toddler, are one. What unites them is a personal history, an individual essence that began when the embryo was conceived. Like the authors of Donum Vitae, Senator Brownback believes that the history begins at conception because that is the moment at which the unique genetic identity of an individual is created. Like the authors of

186. Id. at H387; see also 153 CONG. REC. S4259 (daily ed. Apr. 10, 2007) (reporting view of Sen. Brownback, R-Kan., that embryos are the "youngest of human beings" and grow into persons).
188. Id. at S4281.
189. Id.
190. See id.
191. Id.
the *Human Cloning Report*, Senator Brownback seizes upon the continuum of biological development as evidence of a continuous personal history.\(^\text{192}\) Hannah is always Hannah, whether she is an embryo, a 21 week-old fetus, or a toddler.\(^\text{193}\)

During the debates, Senator Brownback was not alone in his perceptions.\(^\text{194}\) Consider the words of Representative Steve King (R-Iowa), as he stated, “I looked Sam and Ben in the eye and I looked David in the eye here a year ago, giggly, laughing, bubbly little children that were for 9 years frozen . . . .”\(^\text{195}\) It is striking that Representative King referred to *children* that were frozen; they were not, but their personal histories, or essences, began at the zygote stage. Similarly, Representative Mike Pence (R-Indiana) stated, “Forty-eight years and nine months ago today, I was an embryo.”\(^\text{196}\) In other words, his personal history, or essence, began at conception, progressed through gestation, and extended to the day of the hearing.\(^\text{197}\)

By using specific individuals as examples, these lawmakers exploit the powerful instinct that history defines the person. If that history begins at conception, the instinct points to the conclusion that embryos deserve protection against destructive research as much as any other person at any other point in his or her personal history.

4. NIH Guidelines and Litigation

After President Barack Obama took office in 2009, he directed the National Institutes of Health (NIH) to take a new approach.\(^\text{198}\) The NIH promptly issued guidelines that permit funding of research on hESC lines once those lines have been derived from donated IVF embryos using other funds.\(^\text{199}\) In other words, so long as private or state money is used to fund the disaggregation of embryos and the creation of hESC lines, the NIH believes it has the legal right to step in afterwards and finance research on those lines.\(^\text{200}\)

Soon after the NIH released its guidelines, a group of pro-life
organizations and individuals, including human embryos at risk, sued the Department of Health and Human Services, its Secretary, Kathleen Sebelius, the NIH, and the NIH Director. The plaintiffs claimed the NIH guidelines violated the Dickey-Wicker Amendment and sought an injunction against implementation of the guidelines. The defendants challenged the plaintiffs' standing to sue, but two scientists working in the field of adult stem cell research were found to have standing.

In 2010, on remand, Judge Royce C. Lamberth granted a preliminary injunction blocking the funding of hESC research under the NIH guidelines. The key to Judge Lamberth's decision was his broad interpretation of the Dickey-Wicker Amendment. Judge Lamberth found that the language of the Amendment expressed the "unambiguous intent of Congress to enact a broad prohibition of funding research in which a human embryo is destroyed." In Judge Lamberth's view, the ban applied to all research in which a human embryo was destroyed, including hESC research because it necessarily hinged on the prior destruction of a human embryo. Therefore, he reasoned, the NIH guidelines violated Dickey-Wicker. Since the plaintiffs were likely to prevail on the merits of their case, Judge Lamberth granted the preliminary injunction.

The U.S. Court of Appeals for the District of Columbia Circuit stayed the injunction so that federal funding could resume while an

203. The U.S. District Court for the District of Columbia originally dismissed the case for lack of standing. Id. at 7. On appeal, however, the U.S. Court of Appeals for the District of Columbia Circuit held that the case could proceed. Sherley II, 610 F.3d at 75. Though most of the plaintiffs lacked standing, the two scientists working in the field of adult stem cell research would be forced under the NIH guidelines to compete with hESC researchers for scarce federal funds and thus had competitor standing. Id. at 74. The D.C. Circuit also concluded that the scientists had prudential standing because their attempt to halt the funding of hESC research was consistent with a plausible reading of the Dickey-Wicker Amendment and its purposes. Id. at 74–75.
205. See id. at 70-71.
206. Id.
207. Id. at 71.
208. Id. at 72.
209. Id. at 69–70. Judge Lamberth also found that the three other requirements for preliminary injunctive relief were met: (1) the plaintiff researchers would suffer irreparable injury if they had to compete for limited federal funding; (2) the balance of hardships weighed in favor of an injunction because plaintiffs' injury was real and imminent and hESC researchers would only face the status quo (no federal funding); and (3) carrying out the will of Congress was in the public interest. Id. at 72–73.
appeal was pending.\textsuperscript{210} Still, the damage had already been done. According to a survey taken shortly after Judge Lamberth granted the preliminary injunction, stem cell scientists in the United States believed that policy uncertainty impacted their research more than the injunction itself.\textsuperscript{211} Some scientists responded to the uncertainty by delaying plans to transition into hESC research.\textsuperscript{212} Those already active in the field delayed new hESC projects, endured disruptions of existing projects, and, in some cases, abandoned hESC research altogether in favor of less controversial projects.\textsuperscript{213}

In 2011, the D.C. Circuit vacated the preliminary injunction.\textsuperscript{214} Contrary to the U.S. District Court for the District of Columbia, it held that the word "research" in the Dickey-Wicker Amendment was ambiguous because it might refer to the entire process going all the way back to the destruction of an embryo and derivation of the hESC line, but it could also refer to a discrete project commenced after the line was created.\textsuperscript{215} Because the NIH guidelines were a reasonable interpretation of ambiguous language, they were entitled to deference under well-established principles of administrative law.\textsuperscript{216} The D.C. Circuit also noted that valuable hESC research would be lost if scientists had to halt their work for lack of funds.\textsuperscript{217}

The D.C. Circuit returned the case to Judge Lamberth.\textsuperscript{218} Reading the writing on the wall, Judge Lamberth upheld the validity of the NIH guidelines.\textsuperscript{219} Plaintiffs appealed the unfavorable judgment.\textsuperscript{220}

\textsuperscript{210} See Sherley v. Sebelius, 644 F.3d 388, 392 (D.C. Cir. 2011) (Sherley IV) (describing grant of stay); see also Aaron D. Levine, Policy Uncertainty and the Conduct of Stem Cell Research, 8 CELL STEM CELL 132, 132 (2011).

\textsuperscript{211} Levine, supra note 210, at 133.

\textsuperscript{212} Id.

\textsuperscript{213} Id. at 134 tbl.1.

\textsuperscript{214} Sherley IV, 644 F.3d at 390.

\textsuperscript{215} Id. at 394.

\textsuperscript{216} Id. at 395–96.

\textsuperscript{217} Id. at 398–99.

\textsuperscript{218} Sherley v. Sebelius (Sherley V), 776 F. Supp. 2d 1, 10 (D.D.C. 2011).

\textsuperscript{219} Id. at 24–25. Following the D.C. Circuit, Judge Lamberth acknowledged the ambiguity of Dickey-Wicker's ban on funding research in which a human embryo is destroyed, and deferred to the NIH's interpretation of that clause. Id. at 15–16. The plaintiffs then argued that the NIH guidelines violated a different clause in Dickey-Wicker, one that prohibits the funding of research in which human embryos are knowingly subjected to risk of injury or death. Id. at 16–17. The plaintiffs claimed federally funded research projects subjected human embryos to risk of death because they created an incentive for scientists to derive new hESC lines for research purposes. Id. at 17. Judge Lamberth rejected this argument also. Id. at 21. The term "research" was ambiguous and could refer to discrete projects; no harm came to human embryos in the course of discrete projects involving research on hESC lines; and therefore, the NIH decision to fund such research was entitled to deference. Id. at 17–21. Finally, Judge Lamberth rejected the plaintiffs' claim that the NIH had issued its guidelines in violation of the Administrative Procedure Act (APA). Id. at 24.
the D.C. Circuit affirmed. Plaintiffs petitioned the United States Supreme Court for a writ of certiorari. On January 7, 2013, the Supreme Court denied the petition for writ.

5. Lessons

Several lessons can be drawn from this brief history of the federal funding of hESC research. The first and most obvious is that opponents of the field have shown little interest in compromise. The only real attempt came in 2001, when George W. Bush decided to fund research on some existing hESC lines despite his pro-life views. By 2006 and 2007, when Congress attempted to expand federal funding, President Bush’s position had hardened and his only response was the veto. In 2009, when President Obama finally loosened the federal purse strings, opponents filed the Sherley litigation and worked tirelessly for years to scuttle the NIH guidelines.

Second, given this history, scientists cannot be confident that the battle over federal funding of hESC research is over. If the political winds of the future blow in a more conservative direction, Congress could rewrite Dickey-Wicker so that it clearly precludes funding for research on hESC lines. Alternatively, the public could elect a President in 2016 who orders the NIH to adopt more restrictive funding guidelines. Doubts about the future create an incentive for scientists to pursue research in a less controversial field, such as adult stem cell or iPSC research.

Third, the same moral convictions that thwart compromise appear to be rooted in essentialist intuitions; and those intuitions are the product of a heuristic. The unconscious, automatic operation of the heuristic obscures the origin of the convictions, leaving those who hold them with a powerful yet unexamined sense of right and wrong.

221. Id. The D.C. Circuit held that this latest appeal presented the same interpretive issues that it had resolved when vacating the preliminary injunction. Id. at 780–84. It also agreed with Judge Lamberth that the NIH had not violated the APA. Id. at 784–85.
223. Id.; see also End of an Era: Supreme Court Won’t Hear Stem Cell Case, GENETIC ENGINEERING & BIOTECHNOLOGY NEWS (Jan. 8, 2013), http://www.genengnews.com/keywords andtools/print/4/29931 [hereinafter End of an Era].
224. See President Bush, Remarks, supra note 166.
B. State Laws

Even if federal funding is available for hESC research, there is no guarantee that an applicant will receive it.\textsuperscript{227} Thus, before a scientist chooses to pursue hESC research, he or she must also consider the availability of other funding sources, such as state research grants. Unfortunately, stem cell advocates anticipate that at least some state legislatures will move to curtail state funding for hESC research.\textsuperscript{228}

Worse, scientists face a risk of imprisonment because some states frown upon research that is harmful to embryos or fetuses. For example, Minnesota and South Dakota prohibit research that is destructive to human embryos.\textsuperscript{229} Louisiana bans the culturing of in vitro embryos for research.\textsuperscript{230} Still other states, including Florida, North Dakota, Maine, Pennsylvania, and Rhode Island, have bans on fetal experimentation that may also prohibit experiments on in vitro embryos.\textsuperscript{231} In any of these states, it would be dangerous for a scientist to create a hESC line because that act requires the disaggregation and destruction of a human embryo.

Conservative states may also outlaw hESC research specifically. For example, in 2010, the Arizona State Legislature enacted statutes prohibiting an array of controversial biotechnologies, including human cloning and the creation of human-animal hybrids.\textsuperscript{232} Scientists who flout these prohibitions are guilty of a misdemeanor.\textsuperscript{233} But the Legislature reserved its greatest wrath for scientists who engage in "destructive human embryonic stem cell research"—that is, scientists who disaggregate human embryos to make stem cell lines.\textsuperscript{234} Those scientists are guilty of a felony under Arizona law.\textsuperscript{235} It is hard to imagine a greater discouragement to hESC researchers living in Arizona, many of whom may not be able to leave the state for personal or professional reasons.

State laws that ban research on embryos, as well as laws that ban hESC research specifically, treat human embryos as if they have a
moral standing comparable to that of born persons. Claims that human embryos deserve such treatment reflect intuitions derived from psychological essentialism. Therefore, state laws of this kind are themselves the likely product of psychological essentialism. In other words, a scientist who engages in cutting-edge, twenty-first century technology may go to prison because state lawmakers are operating on the strength of an ancient heuristic developed to deal with wild beasts and other natural kinds in *Homo sapiens*’ ancestral environment.

### IV. CONCLUSION

In order for hESC research to progress, it must receive reliable funding within a stable legal regime. Toward those ends, this Article concludes with some observations and recommendations.

In a democracy, the views of the majority count. As mentioned above, sixty-two percent of the public supports hESC research. Proponents must build on this majority nationally and within individual states. Majority, or even supermajority, support for the research is the only realistic means of reducing the financial and legal uncertainty that plagues the field.

To be sure, committed opponents of hESC research are unlikely to alter their views. But other voters whose opposition is softer may be amenable to persuasion. Moreover, every year thousands of young people reach maturity and join the electorate with minds that are open to new ideas. It is essential to persuade these voters that hESC research deserves funding and legal protection. The question is how that argument can best be made.

Proponents have done a reasonably good job of explaining the scientific and medical benefits of hESC research to the public and lawmakers. However, fifteen years of controversy has made it clear that such benefits are not enough to secure financial and legal support for the research. It is easy to see why: if a person senses that embryos are the moral equivalents of born persons, that person will conclude that it is wrong to sacrifice embryos for any purpose, no matter how beneficial. Therefore, proponents must go straight to the heart of the matter and find some means of persuading voters that embryos are not the moral equivalents of born persons.

In 2009, scientist Jane Maienschein published a thoughtful article critiquing biologists for over-emphasizing the role of genes at the expense of epigenetic and environmental factors in human development. In Maienschein’s view, this genetic determinism has

236. *MACINTOSH, supra note 10, at 203.*

237. *See* Jane Maienschein, *Cloning and Stem Cell Debates in the Context of Genetic*
contributed to the religious view that life begins at the moment of conception.\textsuperscript{238} Maienschein has a point; arguments against hESC research do appear to be rooted in a simplistic view of the biological nature and destiny of the human embryo. However, scientific education is not enough when opposition to hESC research also has deep psychological roots.

This Article posits that much of the opposition to hESC research is based on intuitions that are themselves the product of a heuristic known as psychological essentialism. These intuitions are difficult to combat because the heuristic is deeply engrained and operates with little conscious thought.

Therefore, proponents of hESC research should study psychological essentialism so that they can reveal the role the heuristic has played in the debate. They should insist that future reports written to instruct policymakers include information about psychological essentialism. They should demand that federal and state hearings on proposed legislation include testimony from cognitive psychologists or other experts qualified to address the origins of opposition to hESC research in essentialist intuition. They should discuss the role of psychological essentialism at conferences and in publications. Voters have the right to decide for themselves what to believe; but, first, they should be warned about the hidden intuitions that may be doing the deciding for them.

\textsuperscript{238} Id. at 575–76.