

# ROBERT P. GEORGE LECTURE SERIES: EMBRYO ETHICS: JUSTICE AND NASCENT HUMAN LIFE

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## I. INTRODUCTION

If we were to contemplate killing mentally retarded infants to obtain transplantable organs, no one would characterize the controversy that would erupt as a debate “about organ transplantation.” The dispute would properly be characterized as a debate about the ethics of killing retarded children to harvest their vital organs. The issue could not be resolved by considering how many gravely ill non-retarded people could be saved by extracting a heart, two kidneys, a liver, etc. from each retarded child. The threshold question would be whether it is unjust to relegate a certain class of human beings—the retarded—to the status of objects that can be killed and dissected to benefit others.

By the same token, we should not be speaking in terms of a debate “about embryonic stem cell research.” No one would object to the use of embryonic stem cells in biomedical research or therapy if they could be harvested without killing or harming the embryos from whom they were obtained. Nor would anyone object to using such cells if they could be obtained from embryos lost in spontaneous abortions. The point of controversy is the ethics of deliberately destroying human embryos for the purpose of harvesting their stem cells. The threshold question is whether it is unjust to kill members of a certain class of human beings—those in the embryonic stage of development—to benefit others.

But are human embryos human beings?

I will here state my reasons for sharing the view that human embryos are indeed human beings, and, as such, deserve what some call “full moral respect.” I will, in addition, respond to some of the arguments advanced by people who reject this view.

## II. EMBRYONIC HUMAN BEINGS

A human embryo is not something different in kind from a human being, like a rock, or potato, or rhinoceros. A human embryo is a whole

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living member of the species *Homo sapiens* in the earliest stage of his or her natural development. Unless severely damaged, or denied or deprived of a suitable environment, an embryonic human being will, by directing its own integral organic functioning, develop himself or herself to the next more mature developmental stage, i.e., the fetal stage. The embryonic, fetal, infant, child, and adolescent stages are stages in the development of a determinate and enduring entity—a human being—who comes into existence as a single cell organism (zygote) and develops, if all goes well, into adulthood many years later.<sup>1</sup>

Just as fertilization, if successful, generates a human embryo, cloning produces the same result by combining what is normally combined and activated in fertilization, that is, the full genetic code plus the ovular cytoplasm. Fertilization produces a new and complete, though immature, human organism. The same is true of successful cloning, i.e., somatic cell nuclear transfer (SCNT). Cloned embryos, therefore, ought to be treated as having the same moral status, whatever that might be, as other human embryos.

Human embryos, whether created by the union of gametes or cloning, possess the epigenetic primordia for self-directed growth into adulthood, with their determinateness and identity fully intact. The adult human being that is now you or me is the same human being who, at an earlier stage of his or her life, was an adolescent, and before that a child, an infant, a fetus, and an embryo.<sup>2</sup> Even in the embryonic stage, you and I were undeniably whole, living members of the species *Homo sapiens*. We were then, as we are now, distinct and complete—though in the beginning we were, of course, immature—human organisms. We were not mere parts of other organisms.

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<sup>1</sup> A human embryo (like a human being in the fetal, infant, child, or adolescent stage) is not properly classified as a “pre-human” organism with the mere potential to become a human being. No human embryologist or textbook in human embryology known to me presents, accepts, or remotely contemplates such a view. The testimony of all leading embryology textbooks is that a human embryo is—already and not merely potentially—a human being. His or her potential, assuming a sufficient measure of good health and a suitable environment, is to develop by an internally directed process of growth through the further stages of maturity on the continuum that is his or her life.

<sup>2</sup> Thus, “recollecting (at her birth) his appreciation of Louise Brown as one or two cells in his petri dish, [Robert] Edwards [said]: ‘She was beautiful then and she is beautiful now.’” John Finnis, *Some Fundamental Evils in Generating Human Embryos by Cloning*, in *ETICA DELLA RICERCA BIOLOGIA* 116 (Cosimo Marco Mazzoni, ed.) (quoting ROBERT EDWARDS & PATRICK STEPTOE, *A MATTER OF LIFE: THE STORY OF A MEDICAL BREAKTHROUGH* (1981)). Edwards and his co-author accurately describe the embryo as “a microscopic human being—one in its very earliest stages of development.” ROBERT EDWARDS & PATRICK STEPTOE, *A MATTER OF LIFE: THE STORY OF A MEDICAL BREAKTHROUGH*, at 83 (1981). They say that the human being in the embryonic stage of development is “passing through a critical period in its life of great exploration: it becomes magnificently organised, switching on its own biochemistry, increasing in size, and preparing itself quickly for implantation in the womb.” *Id.* at 97.

Consider the case of ordinary sexual reproduction. Plainly, the gametes whose union brings into existence the embryo are not whole or distinct organisms. They are functionally (and not merely genetically) identifiable as *parts* of the male or female (potential) parents. Each has only half the genetic material needed to guide the development of an immature human being toward full maturity. They are destined either to combine with an oocyte or spermatozoon to generate a new and distinct organism, or simply die. Even when fertilization occurs, they do not survive; rather, their genetic material enters into the composition of a new organism.

But none of this is true of the human embryo, from the zygote and blastula stages onward. The combining of the chromosomes of the spermatozoon and of the oocyte generates what every authority in human embryology identifies as a new, distinct, and enduring organism. Whether produced by fertilization, Somatic Cell Nuclear Transfer (SCNT), or some other cloning technique, the human embryo possesses all of the genetic material needed to inform and organize its growth. The direction of its growth *is not extrinsically determined*, but is in accord with the genetic information *within* it.<sup>3</sup> Moreover, unless deprived of a suitable environment, or prevented by accident or disease, the embryo is actively developing itself to maturity. Thus, it not only possesses all of the necessary organizational information for maturation, but it has an *active disposition* to develop itself using that information. The human embryo is, then, a whole (though immature) and distinct human organism—a human being.

If the embryo were not a complete organism, then what could it be? Unlike the spermatozoa and the oocytes, it is not merely a part of a larger organism, namely, the mother or the father. Nor is it a disordered growth such as a hydatidiform mole or teratoma. (Such entities lack the internal resources actively to develop themselves to the next more mature stage of the life of a human being. The direction of their growth is not towards human maturity.) Perhaps someone will say that the early embryo is an intermediate form, something which regularly emerges into a whole (though immature) human organism, but is not one yet. But what could cause the emergence of the whole human organism, and cause it with regularity? It is clear that from the zygote stage forward, the major development of this organism is *controlled and directed from within*, that is, by the organism itself. So, after the embryo

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<sup>3</sup> The first one or two divisions, in the first thirty-six hours, occur under the direction of the messenger RNA acquired from the oocyte, and thereafter the cleavages are guided by the embryo's DNA. See SCOTT GILBERT, *DEVELOPMENTAL BIOLOGY* 366 (7th ed. 2003); see also RONAN O'RAHILLY & FABIOLA MUELLER, *HUMAN EMBRYOLOGY & TERATOLOGY* 38 (3rd ed. 2001). Still, these cleavages do not occur if the embryo's nucleus is not present, and so the nuclear genes also control these early changes.

comes into being, no event, or series of events, occur which could be construed as the production of a new organism; that is, nothing extrinsic to the developing organism itself acts on it to produce a new character or new direction in development.

### III. DO CLONED HUMAN EMBRYOS DESERVE RESPECT?

But does this mean that the human embryo is a human being deserving full moral respect such that it may not legitimately be used as a mere means to benefit others? To deny that embryonic human beings deserve full respect, one must suppose that not every whole living human being deserves full respect. To do that, one must hold that those human beings who deserve full respect deserve it not by virtue of the *kind of entity they are*, but, rather, by virtue of some acquired characteristic that some human beings (or human beings at some stages) have and others do not have, and which some human beings have in greater degree than others.<sup>4</sup>

In my judgment, this position is untenable. It is clear that one need not be *actually* conscious, reasoning, deliberating, making choices, etc., in order to be a human being who deserves full moral respect, for plainly people who are asleep or in reversible comas deserve such respect. So, if one denied that human beings are intrinsically valuable in virtue of what they are, but required an additional attribute, the additional attribute would have to be a capacity of some sort, and, obviously a capacity for certain mental functions. Of course, human beings in the embryonic, fetal, and early infant stages lack immediately exercisable capacities for mental functions characteristically carried out (though intermittently) by most (not all—consider cases of the severely retarded and comatose) human beings at later stages of maturity. Still, they possess in radical (root) form these very capacities. Precisely by virtue of

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<sup>4</sup> A possible alternative, though one finding little support in current discussions, would be to argue that what I am, or you are, is not a human organism at all, but rather a nonbodily consciousness, or spirit, merely inhabiting or somehow “associated with” a body. The problem with this argument is that it is clear that we are bodily entities or organisms, albeit of a particular type, namely, organisms of a rational nature. A living thing that performs bodily actions is an organism, a bodily entity. But it is immediately obvious in the case of the human individual that it is the same subject that perceives, walks, and talks (which are bodily actions), and that understands, deliberates, and makes choices—what everyone, including anyone who denies he is an organism, refers to as “I.” It must be the same entity that perceives these words on a page, for example, and understands them. Thus, what each of us refers to as “I” is identically the physical organism that is the subject both of bodily actions, such as perceiving and walking, and of mental activities, such as understanding and choosing. Therefore, you and I are physical organisms, rather than consciousnesses that merely inhabit or are “associated with” physical organisms. See Patrick Lee, *Human Beings are Animals*, in *NATURAL LAW AND MORAL INQUIRY* 135-51 (Robert P. George ed., 1998). And so plainly we came to be when the physical organism we are came to be; we once were embryos, then fetuses, then infants, and so on.

*the kind of entity they are*, they are from the beginning actively developing themselves to the stages at which these capacities will (if all goes well) be immediately exercisable. In this critical respect, they are quite unlike cats and dogs—even fully mature members of those species. As humans, they are members of a natural kind—the human species—whose embryonic, fetal, and infant members, if not prevented by some extrinsic cause, develop in due course and by intrinsic self-direction the immediately exercisable capacities for characteristically human mental functions. Each new human being comes into existence possessing the internal resources to develop immediately exercisable characteristically human mental capacities—and only the adverse effects of *other causes* will prevent their full development. In this sense, even human beings in the embryonic, fetal, and infant stages have the *basic natural* capacity for characteristically human mental functions.

We can, therefore, distinguish two senses of the “capacity” (or what is sometimes referred to as the “potentiality”) for mental functions: an immediately exercisable one, and a basic natural capacity, which develops over time. On what basis can one require, for the recognition of full moral respect the first sort of capacity, which is an attribute that human beings acquire (if at all) only in the course of development (and may lose before dying), and that some will have in greater degree than others, and not the second, which is possessed by human beings as such? I can think of no good reason or non-arbitrary justification for this position.

By contrast, there are good reasons to hold that the second type of capacity is the ground for full moral respect. First, someone entertaining the view that one deserves full moral respect only if one has immediately exercisable capacities for mental functions should realize that the developing human being does not reach a level of maturity at which he or she can perform a type of mental act that other animals do not perform—even animals such as dogs and cats—until at least several months after birth. A six-week old baby lacks the *immediately exercisable* capacity to perform characteristically human mental functions. So, if full moral respect were due only to those who possess immediately exercisable capacities for characteristically human mental functions, it would follow that six-week old infants do not deserve full moral respect.<sup>5</sup> If one further takes the position that beings (including human beings) deserving less than full moral respect may legitimately be dismembered for the sake of research to benefit those who are

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<sup>5</sup> Unsentimental believers that full moral respect is due only to those human beings who possess immediately exercisable capacities for characteristically human mental functions do not hesitate to draw the inference that young infants do not deserve full moral respect. See, e.g., Peter Singer, *Killing Babies is Not Always Wrong*, THE SPECTATOR, Sept. 16, 1995, at 20-22.

thought to deserve full moral respect, then one is logically committed to the view that, subject to parental approval, the body parts of human infants, as well as those of human embryos and fetuses, should be fair game for scientific experimentation.

Second, the difference between these two types of capacity is merely a difference between stages along a continuum. The proximate, or immediately exercisable, capacity for mental functions is only the development of an underlying potentiality that the human being possesses simply by virtue of the kind of entity it is. The capacities for reasoning, deliberating, and making choices are gradually developed, or brought towards maturation, through gestation, childhood, adolescence, and so on. But the difference between a being that deserves full moral respect and a being that does not, and can therefore legitimately be dismembered as a means of benefiting others, cannot consist only in the fact that, while both have some capacity, one has *more* of it than the other. A mere *quantitative* difference (having more or less of the same feature, such as the development of a basic natural capacity) cannot, by itself, be a justificatory basis for treating different entities in *radically* different ways. Between the ovum and the thousands of approaching sperm, on the one hand, and the embryonic human being, on the other, there *is* a clear difference in kind. But between the embryonic human being and that same human being at any later stage of its maturation, there is only a difference in degree of development.<sup>6</sup>

Third, being a whole human organism (whether immature or not) is an either/or matter—a thing either is or is not a whole human being.<sup>7</sup> But the acquired qualities that could be proposed as criteria for personhood come in varying and continuous degrees: there are an infinite number of degrees of the relevant developed abilities or dispositions, such as for self-consciousness, intelligence, or rationality. So, if human beings were worthy of full moral respect only because of such qualities, and not in virtue of the kind of being they are, then, since

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<sup>6</sup> Michael Gazzaniga has suggested that the embryo is to the human being what a Home Depot store is to a house, i.e., a collection of unintegrated components. According to Dr. Gazzaniga, “it is a truism that the blastocyst has the potential to be a human being. Yet at that stage of development it is simply a clump of cells. . . . An analogy might be what one sees when walking into a Home Depot. There are the parts and potential for at least 30 homes. But if there is a fire at Home Depot, the headline isn’t 30 homes burn down. It’s Home Depot burns down.” *Metaphor of the Week*, 295 SCI. 1637 (2002) (quoting Michael Gazzaniga). Dr. Gazzaniga gives away the game, however, in conceding, as he must, that the term “blastocyst” refers to a stage of development in the life of a determinate, enduring, integrated, and, indeed, self-integrating entity. If an analogy to a Home Depot is to be drawn, it is the gametes (or the materials used to generate an embryo by a process of cloning), not the embryo, that constitute the “parts and potential.”

<sup>7</sup> This is not to deny that there will likely be borderline cases in which it will be difficult to say whether a particular being is or is not a human being, or does or does not possess a rational nature.

such qualities come in varying degrees, no account could be given of why basic rights are not possessed by human beings in varying degrees. The proposition that all human beings are created equal would be relegated to the status of a superstition. For example, if basic rights were possessed by virtue of developed self-consciousness, then, since some people are more self-conscious than others (that is, have developed that capacity to a greater extent than others), some people would be greater in dignity than others, and the rights of the superiors would trump those of the inferiors where the interests of the superiors could be advanced at the cost of the inferiors. This conclusion would follow no matter which of the acquired qualities generally proposed as qualifying some human beings (or human beings at some developmental stages) for full respect were selected. Clearly, developed self-consciousness, or desires, or capacities for deliberation and choice, are arbitrarily selected degrees of development of capacities that all human beings possess in (at least) radical form from the coming into being of the organism until his or her death. So, it cannot be the case that *some* human beings, *and not others*, are intrinsically valuable by virtue of a certain degree of development. Rather, human beings are intrinsically valuable (in the way that enables us to ascribe to them equality and basic rights) *by virtue of what* (i.e., the *kind of being*) they are; and *all* human beings—not just some, and certainly not just those who have advanced sufficiently along the developmental path as to be able to exercise their capacities for characteristically human mental functions—are intrinsically valuable.

Since human beings are intrinsically valuable and deserving of full moral respect by virtue of what they are, it follows that they are intrinsically valuable from the point at which they come into being. Even in the embryonic stage of our lives, each of us was a human being and, as such, worthy of concern and protection. Embryonic human beings, whether brought into existence by union of gametes, SCNT, or other cloning technologies, should be accorded the status of inviolability recognized for human beings in other developmental stages.

#### IV. POTENTIALITY: GAMETES, SOMATIC CELLS, AND EMBRYOS

I wish to turn now to arguments that have been advanced in the course of the President's Council's deliberations in an effort to cast doubt on the proposition that human embryos deserve to be accorded such status.

People who argue that human beings in the embryonic stage do not deserve the level of respect accorded to human beings at more mature stages of development point out that the five or six-day-old embryo is very small—smaller than the period at the end of a sentence on a printed page. The embryo looks nothing like what we ordinarily think of as a human being. It has not yet developed a brain—so it does not exhibit the

human capacity for rationality. Indeed, it has no consciousness or awareness of any sort. It is not even sentient. Of course, people who deny that human embryos are human beings entitled to respect as such acknowledge that the entities in question possess a human genome. They point out, however, that the same is true of ordinary somatic cells (such as the skin cells), enormous numbers of which each of us rubs or washes off our bodies on any given day. Plainly these cells are not human beings; nobody supposes that there is anything wrong with destroying them or using them in scientific research.

What can be said in reply to these points and arguments? To claims about the size and appearance of the embryo, I would say that it merely begs the question about the humanity and rights of the embryo to say that it does not resemble (in size, shape, etc.) human beings in later stages of development. The five-day old embryo looks exactly like what human beings look like at five days old. Each of us looked like that during the embryonic stage of our lives. The morally relevant consideration is not appearance; rather, it is the fact that from the beginning the embryo possesses the epigenetic primordia for self-directed growth and maturation through the stages of human development from the embryonic, through the fetal, infant, child, and adolescent stages, and into adulthood with its distinctness, unity, determinateness, and identity fully intact. As such, the embryo is a whole, living member of the species *Homo sapiens* which is already—and not merely potentially—himself or herself to the next more mature stage along the continuum of development of a determinate and enduring human life.

The point was illustrated rather vividly at the second meeting of the President's Council at which we had a presentation by, and discussion with, Dr. Irving L. Weissman, chairman of the committee of the National Academy of Sciences that drafted the Academy's own report on human cloning.<sup>8</sup> Dr. Weissman, one of the nation's most distinguished research scientists and a leader in the field of adult stem cell research, personally favors funding of embryonic research as well as cloning for research purposes.<sup>9</sup> He was with us, however, to answer *scientific* questions, and (as he made very clear) not to offer opinions on ethics, a subject matter in which he claims no particular expertise. He was very candid with us, and informative. I was curious to know whether Dr. Weissman would concede that the term "embryo" or "blastocyst" refers to a certain very early *stage of development in a human being's life*, or whether he would

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<sup>8</sup> *National Academy of Sciences Report (Weissman): Transcript of Second Meeting of President's Council on Bioethics*, Feb. 13, 2002, Sess. 2, ¶ 294, at <http://bioethics.gov/transcripts/feb02/feb13session2.html>.

<sup>9</sup> *Id.* at ¶¶ 362.



insist that the embryo or blastocyst is analogous to a sperm cell, ovum, or skin cell.<sup>10</sup> I asked Dr. Weissman if in referring to the “blastocyst” he meant “a stage in the development of a determinate organism.”<sup>11</sup> “Yes,” he said.<sup>12</sup> I then inquired whether the chairman of the President’s Council, Dr. Leon Kass, who was presiding at the meeting, was, at an earlier stage of his development, an adolescent, and before that an infant.<sup>13</sup> “That is right,” Dr. Weissman replied.<sup>14</sup> We then got to the heart of the matter: “Before that *Dr. Kass was in the blastocyst stage?*”<sup>15</sup> “For sure,” Dr. Weissman replied.<sup>16</sup>

In defending research involving the destruction of human embryos, Ronald Bailey, a science writer for *Reason* magazine, has developed the analogy between embryos and somatic cells in light of the possibility of human cloning.<sup>17</sup> Bailey claims that every cell in the human body has as much potential for development as any human embryo.<sup>18</sup> Embryos, therefore, have no greater dignity or higher moral status than ordinary somatic cells.<sup>19</sup> Bailey observes that each cell in the human body possesses the entire DNA code; each has become specialized (as muscle, skin, etc.) by most of that code being turned *off*.<sup>20</sup> In cloning, those portions of the code previously de-activated are re-activated. So, Bailey says, quoting Australian bioethicist Julian Savulescu: “If all our cells could be persons, then we cannot appeal to the fact that an embryo could be a person to justify the special treatment we give it.” Since plainly we are not prepared to regard all of our cells as human beings, Bailey argues, we shouldn’t regard embryos as human beings.

Bailey’s analogy, however, between somatic cells and human embryos collapses under scrutiny. The somatic cell is something from which (together with other causes) a new organism can be generated; it is certainly not, however, a distinct organism. A human embryo, by contrast, already is a distinct, self-developing, complete (though immature) human organism.

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<sup>10</sup> Precisely because such cells are not complete human organisms, but are merely parts of the complete human organisms—the human beings—whose sperm, ova, or skin they are, in speaking of them no one would say that we are referring to a stage of development.

<sup>11</sup> *National Academy of Sciences Report*, *supra* note 15, at ¶ 324.

<sup>12</sup> *Id.* at ¶ 325.

<sup>13</sup> *Id.* at ¶¶ 336-49.

<sup>14</sup> *Id.* at ¶ 350.

<sup>15</sup> *Id.* at ¶ 351.

<sup>16</sup> *Id.* at ¶ 352.

<sup>17</sup> Ronald Bailey, *Are Stem Cells Babies?*, REASON ONLINE ¶ 7 (Jul. 11, 2001), at <http://www.reason.com/rb/rb071101.shtml>.

<sup>18</sup> *Id.* at ¶ 9.

<sup>19</sup> *Id.* at ¶ 16.

<sup>20</sup> *Id.* at ¶ 10.

Bailey suggests that the somatic cell and the embryo are on the same level because both have the “potential” to develop to a mature human being. The kind of “potentiality” possessed by somatic cells that might be used in cloning differs profoundly, however, from the potentiality of the embryo. In the case of somatic cells, each has a potential only in the sense that something can be done to it so that its constituents (its DNA molecules) enter into a distinct whole human organism, which is a human being, a person. In the case of the embryo, by contrast, he or she already is actively—indeed dynamically—developing himself or herself to the further stages of maturity of the distinct organism—the human being—he or she already is. True, the whole genetic code is present in each somatic cell, and this code can be used for guidance of the growth of a new entire organism. But, this point does nothing to show that its potentiality is the same as that of a human embryo. When the nucleus of an ovum is removed, and a somatic cell is inserted into the remainder of the ovum and given an electric stimulus, this does more than merely place the somatic cell in an environment hospitable to its continuing maturation and development. Indeed, it generates a wholly distinct, self-integrating, entirely new organism—indeed, it generates an embryo. The entity—the embryo—brought into being by this process, is quite radically different from the constituents that entered into its generation.

Somatic cells, in the context of cloning, then, are analogous not to embryos, but to the gametes whose union results in the generation of a distinct, self-integrating, new organism in the case of ordinary sexual reproduction. Sperm cells and ova are not distinct, complete, self-integrating human organisms; they are, properly speaking, parts of human organisms—the men and women whose gametes they are. Their union can generate a new organism, an entity that is not merely part of another organism. That organism was never, however, a sperm cell or an ovum, nor would a person who was brought into being as an embryo by a process of cloning have been once a somatic cell. All adult human beings, as my exchange with Dr. Weissman made clear, were once embryos, just as they were once children, and before that infants, and before that fetuses. But none of them—none of us—were ever sperm cells, or ova, or somatic cells. To destroy an ovum or a skin cell whose constituents might have been used to generate a new and distinct human organism is not to destroy a new and distinct human organism—for no such organism exists or ever existed. But, in line with Dr. Weissman’s logic, if one were to call to mind any particular human being, and were one to imagine that someone were to have destroyed that human being during the embryonic stage of his or her existence and development, then it could only have been *that* particular human being who would have been destroyed.

## V. PERSONHOOD AND THE BRAIN

Now, some people try to resist the force of this conclusion. For example, Michael Gazzaniga has suggested that the human person comes into being only with the development of a brain, and that prior to that point we have a human organism, but one lacking the dignity and rights of a person.<sup>21</sup> Human beings in the earliest stages of development may, therefore, legitimately be treated as we would treat organs available for transplantation (assuming, as with transplantable organs, that proper consent for their use was given, etc.). In developing his case, Dr. Gazzaniga observes that modern medicine treats the death of the brain as the death of the person—authorizing the harvesting of organs from the remains of the person, even if some physical systems are still functioning. So, the argument goes, if a human being is no longer a person with rights once the brain has died, then surely a human being is not yet a person prior to the development of the brain.

This argument suffers, however, from a damning defect. Under prevailing law and medical practice, the rationale for “brain death” is not that a brain-dead body is a living human organism but no longer a person. Rather, brain death is accepted because the irreversible collapse of the brain destroys the capacity for self-directed integral organic functioning of human beings who have matured to the stage at which the brain performs the key role in integrating the organism. What is left is no longer a unitary organism at all. By contrast, although an embryo has not yet developed a brain, its capacity to do so is inherent and developing, just as the capacity of an infant to develop its brain sufficiently for it to actually *think* is inherent and developing. Moreover, the embryo is clearly exercising self-directed integral organic functioning, and so *is* a unitary organism, and, because of the kind and orientation of this functioning, is clearly a *human* organism.

Unlike a corpse—which is merely the remains of what was once a human organism but is now dead, even if particular systems may be mechanically sustained—a human being in the embryonic stage of development is a complete, unified, self-integrating human organism. It is not dead, but very much alive. A factor, or factors, other than the brain make possible its self-integration and organic functioning. Its future lies ahead of it, unless it is cut off or not permitted to develop its inherent capacities. Thus it is that I and other defenders of embryonic human life insist that the embryo is not a “potential life,” but is rather a life *with potential*. It is a potential *adult*, in the same way that fetuses, infants, children, and adolescents are potential adults. It has the

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<sup>21</sup> *Ethical Issues in Clonal Reproduction: Transcript of First Meeting of President's Council on Bioethics*, Jan. 18, 2002, Sess. 5 ¶ 39, at <http://bioethics.gov/transcripts/jan02/jan18session5.html>.

potential for agency, just as fetuses, infants, and small children do. But, like human beings in the fetal, infant, child, and adolescent stages, human beings in the embryonic stage are already, and not merely potentially, *human beings*. All of these stages are (as Dr. Weissman made clear in conceding that Dr. Kass was once in a blastocyst stage) developmental stages in the life of a being who comes into existence as a single cell human organism and develops, if all goes well, into adulthood by a gradual and gapless process over many years. An embryo (or fetus or infant) is not something distinct from a human being; it is a human being at the earliest stage of its development.

#### VI. TWINNING

Some have claimed that the phenomenon of monozygotic twinning shows that the embryo in the first several days of its gestation is not a human individual. The suggestion is that as long as twinning can occur, what exists is not yet a unitary human being, but only a mass of cells—each cell is totipotent and allegedly independent of the others.

It is true that, if a cell or group of cells is detached from the whole at an early stage of embryonic development, then what is detached can sometimes become a distinct organism and has the potential to develop to maturity as distinct from the embryo from which it was detached (this is the meaning of “totipotent”). But this does nothing to show that, before detachment, the cells within the human embryo constituted only an incidental mass. Consider the parallel case of division of a flatworm. Parts of a flatworm have the potential to become a whole flatworm when isolated from the present whole of which they are part. Yet no one would suggest that, prior to the division of a flatworm to produce two whole flatworms, the original flatworm was not a unitary individual. Likewise, at the early stages of human embryonic development, before specialization by the cells has progressed very far, the cells or groups of cells can become whole organisms if they are divided and have an appropriate environment after the division. But that fact does not in the least indicate that, prior to such an extrinsic division, the embryo is other than a unitary, self-integrating, actively developing human organism. It certainly does not show that the embryo is a mere “clump of cells.”

In the first two weeks, the cells of the developing embryonic human being already manifest a degree of specialization or differentiation. From the very beginning, even at the two-cell stage, the cells differ in the cytoplasm received from the original ovum. Also, they are differentiated by their position within the embryo. In mammals, even in the unfertilized ovum, there is already an “animal” pole (from which the nervous system and eyes develop) and a “vegetal” pole (from which the

future “lower” organs and the gut develop).<sup>22</sup> After the initial cleavage, the cell coming from the “animal” pole is probably the primordium of the nervous system and the other senses, and the cell coming from the “vegetal” pole is probably the primordium of the digestive system.<sup>23</sup> Moreover, the relative position of a cell from the very beginning (that is, from the first cleavage) has an impact on its functioning. Monozygotic twinning usually occurs at the blastocyst stage, in which there clearly is a differentiation of the inner cell mass and the trophoblast that surrounds it (from which the placenta develops).<sup>24</sup>

The orientation and timing of the cleavages are species specific, and are therefore genetically determined, that is, determined from within. Even at the two-cell stage, the embryo begins synthesizing a glycoprotein called “E-cadherin” or “uvomorulin,” which will be instrumental in the compaction process at the 8-cell stage, the process in which the blastomeres (individual cells of the embryo at the blastocyst stage) join tightly together, flattening and developing an inside-outside polarity.<sup>25</sup> And there is still more evidence, but the point is that, from the zygote stage forward, the embryo is not only maintaining homeostasis but is internally integrating various processes to direct them in an overall growth pattern toward maturity.<sup>26</sup>

However, the clearest evidence that the embryo in the first two weeks is not a mere mass of cells but is a unitary organism is this: *if the individual cells within the embryo before twinning were each independent of the others, there would be no reason that each would not regularly develop on its own. Instead, these allegedly independent, non-communicating cells regularly function together to develop into a single, more mature member of the human species.* This fact shows that interaction is taking place between the cells from the very beginning (even within the zona pellucida, before implantation), restraining them from individually developing as whole organisms and directing each of them to function as a relevant part of a single, whole organism continuous with the zygote. Thus, prior to an extrinsic division of the cells of the embryo, these cells together *do* constitute a single organism. So, the fact of twinning does not show that the embryo is a mere incidental mass of cells. Rather, the evidence clearly indicates that the

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<sup>22</sup> WERNER A. MULLER, DEVELOPMENTAL BIOLOGY 12 (1997); *see also* GILBERT, *supra* note 3, at 380-381; O’RAHILLY & MULLER, *supra* note 3, at 38-39.

<sup>23</sup> MULLER, *supra* note 29, at 12.

<sup>24</sup> O’RAHILLY & MULLER, *supra* note 3, at 39.

<sup>25</sup> *Id.* at 38-39; *see also* GILBERT, *supra* note 4, at 74; KEITH MOORE & T.V.N. PERSAUD, THE DEVELOPING HUMAN: CLINICALLY ORIENTED EMBRYOLOGY 37 (7th ed. 2003); WILLIAM LARSEN ET AL., HUMAN EMBRYOLOGY 18-21 (3rd ed. 2001).

<sup>26</sup> GILBERT, *supra* note 3, at 25-26 nn. 167 & 221; O’RAHILLY & MULLER, *supra* note 3, at 38-39.

human embryo, from the zygote stage forward, is a unitary, human organism.

#### VII. MISCARRIAGES AND MOURNING

A different argument suggests that, since people frequently do not grieve, or do not grieve intensely, for the loss of an embryo early in pregnancy, as they do for the loss of a fetus late in pregnancy or of a newborn, we are warranted in concluding that the early embryo is not a human being worthy of full moral respect.

The absence of grieving is sometimes a result of ignorance about the facts of embryogenesis and intrauterine human development. If people are told (as they still are in some places) that there simply is no human being until “quickening”—a view which is preposterous in light of the embryological facts—then they are likely not to grieve (or not to grieve intensely) at an early miscarriage. But people who are better informed, and women in particular, very often *do* grieve even when a miscarriage occurs early in pregnancy.

Granted, some people informed about many of the embryological facts are nevertheless indifferent to early miscarriages, but this is often due to a reductionist view according to which embryonic human beings are misdescribed as mere “clumps of cells,” “masses of tissue,” etc. The emotional attitude one has toward early miscarriages is typically, and for the most part, an effect of what one thinks—rightly or wrongly—about the humanity of the embryo. Hence, it is circular reasoning to use the indifference of people who deny that human beings in the embryonic stage deserve full moral respect as an argument for not according such respect.

Moreover, the fact that people typically grieve less in the case of a miscarriage than they do in the case of an infant’s death is partly explained by the simple facts that they do not actually see the baby, hold the child in their arms, talk to him or her, and so on. The process of emotional bonding is typically completed after the child is born—sometimes, and in some cultures, months after the child is born. However, a child’s right not to be killed plainly does not depend on whether the child’s parents or anyone else has formed an emotional bond with him or her. Every year—perhaps every day—people die for whom others do not grieve. This does not mean that they lacked the status of human beings who were worthy of full moral respect. It is simply a mistake to conclude from the fact that people do not grieve, or that they grieve less, at early miscarriage that the embryo has less dignity or worth than human beings at later stages of development.

## VIII. NATURAL EMBRYO LOSS

Now let us turn to yet another argument advanced by those who favor research involving the destruction of human embryos. Some people conclude that embryonic human beings are not worthy of full moral respect because a high percentage of embryos formed in natural pregnancies fail to implant or spontaneously abort. The inference is, I believe, fallacious.

It is worth noting first, as the standard embryology texts point out, that many of these unsuccessful pregnancies are actually due to failures or defects in the process of fertilization.<sup>27</sup> As a result, what is lost in many cases is not a human embryo. For example, a defect in fertilization resulting from the penetration of an ovum by two or more sperm may give rise not to an embryo but to a hydatidiform mole. To be a complete human organism (a human being), the entity must have the epigenetic primordia for a functioning brain and nervous system, though a chromosomal defect might prevent development to maximum functioning (in which case it would be a human being, though handicapped). If fertilization is defective, then what will develop is not an organism with the active capacity for self-directed development as a whole living human being, but rather a disordered growth.

Second, the argument here rests upon a variant of the naturalistic fallacy. It supposes that what happens in “nature,” i.e., with predictable frequency without the intervention of human agency, must be morally acceptable when deliberately caused. Since embryonic death in early miscarriages happens with predictable frequency without the intervention of human agency, the argument goes, we are warranted in concluding that the deliberate destruction of human beings in the embryonic stage is morally acceptable.

The unsoundness of such reasoning can easily be brought into focus by considering the fact that, historically, the infant mortality rate has been very high. (Sadly, there are some places where it is high even today.) If the reasoning under review here were sound, it would show that human infants in such circumstances could not be full human beings possessing a basic right not to be killed for the benefit of others. But that, of course, is surely wrong. The argument is a *non sequitur*.<sup>28</sup>

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<sup>27</sup> O’RAHILLY & MULLER, *supra* note 3.

<sup>28</sup> If I am correct in arguing that human beings in the embryonic stage have the same right not to be killed as human beings at later developmental stages, does that mean that justice requires a society to punish embryo-killing as harshly as it punishes, say, the killing of teenagers? I think the answer to this question is “no.” A number of factors going beyond the basic question of equal right to life of the deceased may legitimately be taken into account in determining the appropriate punishment for different types of homicide.

## IX. ACORNS AND EMBRYOS

In a recent essay in the *New England Journal of Medicine*, Michael Sandel has challenged the position I am defending here. Sandel claims that human embryos are in fact different *in kind* from human beings at later developmental stages. At the core of Sandel's argument is an analogy:

[A]lthough every oak tree was once an acorn, it does not follow that acorns are oak trees, or that I should treat the loss of an acorn eaten by a squirrel in my front yard as the same kind of loss as the death of an oak tree felled by a storm. Despite their developmental continuity, acorns and oak trees are different kinds of things.<sup>29</sup>

So Sandel maintains that, just as acorns are not oak trees, embryos are not human beings.

But this argument collapses under scrutiny.

As Sandel concedes, we value human beings precisely because of the *kind* of entities they are. Indeed, that is why we consider all human beings to be equal in basic dignity and human rights. By contrast, we value oak trees because of certain accidental attributes they have, such as their magnificence—a certain grandeur that has taken perhaps seventy-five or a hundred years to achieve. If oak trees were valuable in virtue of the *kind* of entity they are, then it would follow that it is just as unfortunate to lose an acorn as an oak tree (though our emotional reaction to the two different kinds of loss might, for a variety of possible reasons, nevertheless differ). Sandel's purported analogy works only if he disregards the key proposition asserted by opponents of embryo-killing, namely, *that all human beings, irrespective of age, size, stage of development, or condition of dependency, possess equal and intrinsic dignity by virtue of what (i.e., the kind) of entity they are, not in virtue of any accidental characteristics, which can come and go, and which are present in human beings in varying degrees.* Oak trees and acorns are not equally valuable, because the basis for their value is not *what* they are (i.e., the kind of entity they are), but precisely those accidental characteristics by which they differ from acorns (in particular, the magnificence that comes only with maturity).

Professor Sandel's argument begins to go awry with his choice of analogates. The acorn is analogous to the embryo and the oak tree (he says) is analogous to . . . the "human being." But in view of the developmental continuity that science fully establishes, and Sandel concedes, the proper analogate of the oak tree is the *mature* human being, viz., the adult. Of course, Sandel's analogy has its force because we really do feel a sense of loss when a mature oak is felled. But while it

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<sup>29</sup> Michael J. Sandel, *Embryo Ethics – The Moral Logic of Stem-Cell Research*, 351 NEW ENG. J. MED. 207, 208 (July 15, 2004).



is true that we do not feel the same sense of loss at the destruction of an acorn, it is also true that we do not feel the same sense of loss at the destruction of an oak *sapling*. (Indeed, our reaction to the destruction of a sapling is much more like our reaction to the destruction of an acorn than it is like our reaction to the destruction of a mature oak.) But clearly the oak tree does not differ in kind from the oak sapling. This shows that we value oak trees not because of the kind of entity they are, but rather because of their magnificence. Neither acorns nor saplings are magnificent, so we do not experience a sense of loss when they are destroyed.

But the basis for our valuing human beings is profoundly different. We most certainly do not consider that especially magnificent human beings—such as Michael Jordan or Albert Einstein—are of greater *fundamental and inherent* worth and dignity than human beings who are physically frail or mentally impaired. We would not tolerate the killing of a retarded child or a person suffering from, say, brain cancer in order to harvest transplantable organs to save Jordan or Einstein.

And we do not tolerate the killing of infants, which on Sandel's analogy would be analogous to the oak saplings at whose destruction we feel no particular sense of loss. Managers of oak forests freely kill saplings, just as they might destroy acorns, to ensure the health of the more mature trees. No one regrets this, or gives it a second thought. This is precisely because we do not value members of the oak species—as we value human beings—because of the kind of entity they are. If we did value oaks for the kind of entity they are, and not for their magnificence, then we would likely feel a sense of loss at the destruction of saplings, and it would be reasonable to feel a similar sense of loss at the destruction of acorns. Conversely, if we valued human beings in a way analogous to that in which we value oak trees, then we would have no reason to object to killing human infants or even mature human beings who were severely “defective.” Sandel's defense of embryo-killing on the basis of an analogy between embryos and acorns collapses the moment one brings into focus the profound difference between the basis on which we value oak trees, and the basis on which we ascribe intrinsic value and dignity to human beings.

Secondly, Sandel's argument relies on an equivocation on the terms “oak tree” and “human being.” Of course, as Sandel says, acorns are not oak trees—if by “oak tree” one means a mature member of the oak species. By the same token, a sapling is not an “oak tree” if that is what one means. But if by “oak tree” (or “oak”) one means simply any member of the species, then an acorn (or a sapling) is an oak tree—they are identical substances, differing only in maturity or stage of natural development.

Similarly, no one claims that embryos are mature human beings, that is, adults. But human embryos are human beings, that is, complete, though immature, members of the human species. Embryos are human individuals at an early stage of their development, just as adolescents, toddlers, infants, and fetuses are human individuals at various developmental stages. So to say, as Sandel does, that embryos and human beings are different kinds of things is true only if one focuses exclusively on the accidental characteristics—size, degree of development, and so on. But the central question is, precisely, should we focus only on the accidental characteristics by which embryonic human beings differ from mature human beings, or should we rather recognize their essential nature (that is, what they are)?

Sandel's claim that human embryos are not human beings, or as he says at one point not "full human beings," or are merely "potential human life," simply cannot be squared with the facts of human embryogenesis and developmental biology. Perhaps having these facts in mind, Sandel sometimes seems to consider that, though human embryos are human beings as a matter of biological fact (for example, he says that an oak tree once was an acorn, which, by analogy, would mean that more mature human beings once were embryos), they are not persons. According to this position, which has been famously promoted by Peter Singer, although we once were human embryos, we were not persons at that time and were not entitled to the respect and protection against lethal violence due to persons. And when did we become persons? Sandel, like Singer, says that the important difference between human embryos and persons is that persons are, not only sentient, but "capable of experience and consciousness," and therefore "make higher claims" on us than beings who lack such capacities.

But personhood is not an accidental characteristic, that is, a characteristic which one acquires at some point after he exists and may lose at another point. Being a person is being an individual who has the basic natural capacity to shape his or her life (by reason and free choice)—even though that natural capacity may not be immediately exercisable (as when someone is in a coma) or may take months or years to become immediately exercisable (as with a human infant, fetus, or embryo). If not just sentience, but also being "capable of experience and consciousness" were required to be a person, then it would follow that infants and the comatose would be not be persons either. Being a person, then, is not a result of acquired accidental attributes, but is being a certain type of individual, an individual with a rational nature. But human beings are individuals with a rational nature at every stage of their existence. We come into being as individuals with a rational nature, and we do not cease being such individuals until we cease to be (by dying). We did not acquire a rational nature by achieving sentience

or the immediately exercisable capacity for rational inquiry and deliberation. We were individuals with a rational nature even during the early childhood, infant, fetal, and embryonic stages of our lives. If we are persons now, we were persons then. We were never “human nonpersons.”

#### X. THE IRRELEVANCE OF THE THEOLOGY OF “ENSOULMENT”

Some might worry that my arguments have been a carefully disguised theology of “ensoulment.” None of what I have had to say, however, has anything to do with “ensoulment” or whether an embryo who dies will have spiritual remains in the form of an immaterial soul. That is an interesting *theological* question that is irrelevant to the *moral* debate and the question of *public policy*. For what it is worth, I should point out that the Catholic Church does not try to draw *scientific* inferences about the humanity or distinctness of the human embryo from *theological* propositions about ensoulment. In fact, it works the other way around. Someone who wanted to talk the Pope into declaring something that the Church has up to this point never declared, namely, that the human embryo is “ensouled,” would have to prove his point by marshaling (among other things) the scientific facts. The *theological* conclusion would be drawn on the basis of (among other things) the findings of *science* about the self-integration, distinctness, unity, determinateness, etc. of the developing embryo. So things work *exactly the opposite* of the way some advocates of embryo-destructive research who think they know what the Catholic Church says about “ensoulment,” imagine they work.

#### XI. CONCLUSION

For the reasons I have set forth, I believe that law and public policy should proceed on the basis of full moral respect for human beings irrespective of age, size, stage of development, or condition of dependency. As I see it, justice requires no less. In the context of the debate over cloning, it requires, in my opinion, a ban on the production of embryos, whether by SCNT or other processes, for research that harms them or results in their destruction. Embryonic human beings, no less than human beings at other developmental stages, should be treated as subjects of moral respect and human rights, not as objects that may be damaged or destroyed for the benefit of others.