

## Cloning Addendum; A Statement on the Cloning Report Issued by the President's Council on Bioethics. July 15, 2002

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The subject matter of the present report is human cloning, the production of a human embryo by means of somatic cell nuclear transfer (SCNT) or similar technologies. 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. Cloned embryos therefore ought to be treated as having the same moral status as other human embryos.

A human embryo is a whole living member of the species *homo sapiens* in the earliest stage of his or her natural development. Unless denied 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 and develops, if all goes well, into adulthood many years later.

Human embryos 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. 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.

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 and distinct organism. Whether produced by fertilization or by SCNT or some other cloning technique, the human embryo possesses all of the genetic material needed to inform and organize its growth. Unless deprived of a suitable

environment or prevented by accident or disease, the embryo is actively developing itself to full maturity. The direction of its growth *is not extrinsically determined*, but is in accord with the genetic information *within* it. 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 a part of the mother or of the father. Nor is it a disordered growth such as a hydatidiform mole or teratoma. (Such entities lack the internal resources to actively develop themselves to the next more mature stage of the life of a human being.) 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 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.

But does this mean that the human embryo is a human being deserving of 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 is deserving of full respect. To do that, one must hold that those human beings who deserve full respect deserve it not in virtue of *the kind of entity they are*, but, rather, in virtue of some acquired characteristic that some human beings (or human beings at some stages) have and others do not, and which some human beings have in greater degree than others.

We submit that 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 it is clear that 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 severely retarded children and adults and comatose persons) human beings at later stages of maturity. Still, they possess in radical (= root) form these very capacities. Precisely by virtue of *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 adult 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 capacity 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 on them *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? We can think of no good reason or non-arbitrary justification.

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 performs 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. 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 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 feature, 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 approaching thousands of sperm, on the one hand, and the embryonic human being, on the other hand, 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.

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. But the acquired qualities that could be proposed as criteria for personhood come in varying and continuous degrees: there is 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 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 developed self-consciousness bestowed rights, 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 stages) for full respect were selected. Clearly, developed self-consciousness, or desires, or so on, 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 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 in 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.

Three arguments have been repeatedly advanced in the course of our Council's deliberations in an effort to cast doubt on the proposition that human embryos deserve to be accorded such status.

(1) 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). 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. 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).

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. And there is still more evidence, but the point is that from the zygote stage forward the embryo, as well as maintaining homeostasis, is internally integrating various processes to direct them in an overall growth pattern toward maturity.

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

(2) The second argument we wish to address 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 (wrongly, in our view) 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 her in their arms, talk to 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 her parents or anyone else has formed an emotional bond with 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 grieve less, at early miscarriage that the embryo has in herself less dignity or worth than older human beings.

(3) We now turn to the third argument. Some people, apparently, are moved to believe 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. Again, we submit that the inference is fallacious.

It is worth noting first, as the standard embryology texts point out, that many of these unsuccessful pregnancies are really due to incomplete fertilizations. So in many cases, what is lost is not actually a human embryo. 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 only prevent development to maximum functioning (in which case it would be a human being, though handicapped). If fertilization is not complete, then what is developing is not an organism with the active capacity to develop itself to the mature (even if handicapped) state of a human.

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, and in some places even today, the *infant* mortality rate has been very high. 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*.

In conclusion, we submit 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. Justice requires no less. In the context of the debate over cloning, it requires, in our 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. We also hold that cloning for the purpose of baby making ought to be legally prohibited. In our view, such cloning, even if it could be done without the risk of defects or deformities, treats the child-to-be as a product of manufacture, and is therefore inconsistent with a due respect for the dignity of human beings. Still, it is our considered judgment that cloning for purposes of research, inasmuch as it involves the deliberate destruction of embryos, is morally worse than cloning for the purpose of baby making. Thus we urge that any ban on "reproductive cloning" be a prohibition on the practice of cloning itself, and not on the implantation of embryos. Public policy should protect embryonic human beings and certainly not mandate or encourage their destruction. An effective ban on "reproductive cloning" would be a ban on all cloning.

Although an optimal policy would permanently ban all cloning, we join in this Council's call for a permanent ban on cloning to produce children combined with a four-year ban (or "moratorium") on cloning for biomedical research for the reasons set forth by Gilbert Meilaender in his additional statement. It is our particular hope that a four-year period will provide time for a careful and thorough public debate about the moral status of the human embryo. This is a debate we welcome.

- i. A human embryo (like a human being in the fetal, infant, child, or adolescent stage) is not properly classified as a "prehuman" organism with the mere potential to become a human being. No human embryologist or textbook in human embryology known to us 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. [Back to Text](#)
- ii. The timing of the first two cleavages seems to be controlled by the maternal RNA within the embryo rather than by its new DNA (see Ronan O'Rahilly and Fabiola Mueller, *Human Embryology and Teratology* (New York: John Wiley & Sons, 1992), 23). Still, these cleavages do not occur if the embryo's nucleus is not present, and so the nuclear genes also control these early changes. [Back to Text](#)
- iii. 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-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. 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. [Back to Text](#)
- iv. Werner A. Muller, *Developmental Biology* (New York: Springer Verlag, 1997), 12 f. Scott Gilbert, *Developmental Biology* 5th edition (Sunderland, Mass.: Sinauer Associates, 1997); O'Rahilly and Mueller, *Human Embryology and Teratology*, 23-24. [Back to Text](#)
- v. O'Rahilly and Fabiola Mueller, *Human Embryology and Teratology*, 30-31. [Back to Text](#)
- vi. Ibid. 23-24; Keith Moore, and T.V.N. Persaud, *Before We Are Born: Essentials of Embryology and Birth Defects* (Philadelphia: W.B. Saunders, 1998), 41; William J. Larson, *Human Embryology* 3rd edition (New York: Churchill Livingstone, 2001), 18-21. [Back to Text](#)
- vii. Gilbert, *Developmental Biology*, 12 f; 167 f. Also see O'Rahilly and Mueller, *Human Embryology and Teratology* 23-24. [Back to Text](#)
- viii. A ban on implantation of an existing embryo or class of embryos would be subject to constitutional as well as moral objections. Such a ban would certainly be challenged, and the challenge would likely come from a powerful coalition of "pro-life" and "pro-choice" forces. A prohibition of the production of embryos by cloning would have a far better

likelihood of withstanding constitutional challenge than would a ban on implantation. [Back to Text](#)