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William E. May

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The Moral Status of the Embryo

by

William E. May

The author is a member of the Editorial Advisory Board of The Linacre.

The purpose of this paper is to review some of the more significant recent literature concerning the moral status of the preimplantation human embryo or what some prefer to call the "pre-embryo."

Introduction

The essay by Thomas A. Shannon and Allan Wolter, OFM, in the December, 1990 issue of Theological Studies provides a good summary of the kinds of arguments used to support the position that the preimplantation human embryo cannot rightly be regarded as a person. It can thus serve as an introduction to our inquiry.

The major claims advanced by Shannon and Wolter are the following:

1. The zygote does not possess sufficient genetic information to develop into an embryo; for this development to occur, essential information must be supplied from the mother, and this can be done only after implantation.

2. Although the zygote is the beginning of genetically distinct life, it is neither an "ontological" individual nor necessarily the precursor of one; in fact, the zygote gives rise to an aggregate or colony of individual lives, each genetically the same and equivalent to the original zygote. Since this is so, it is impossible to identify the conception of an "ontological" individual with the completion of fertilization; such conception must rather be said to coincide with implantation.

3. Even after implantation, the "ontological" individual cannot be regarded as a human person insofar as the "biological presuppositions" for the rational potential essential for personal subjects are not yet established; at the earliest such presuppositions are present only around the eighth week of gestation, because only then is the nervous system "fully" integrated [in fact, Shannon and Wolter incline to the view that these "presuppositions" are fully present only around the 26th week of gestation, when "neural integration of the entire organism has been established"].

The second and third claims made by Shannon and Wolter are hardly novel. They have been advanced by others for many years. The second, in particular, has recently been developed in detail by Norman Ford, SDB, and, in my opinion, been even further developed by Michael Coughlan, while the third claim, a
variant of the "delayed hominization" hypothesis, has been around for a long time. But the first claim central to the thesis defended by Shannon and Wolter is more recent and is contingent upon scientific data and their interpretation. In the balance of this paper I propose to examine more closely each of these three claims.

1. Does the Zygote Have Within Itself the Potential to Develop Into an Adult Human Person?

The first claim made by Shannon and Wolter is that the human zygote does not have within itself the potential to develop into an adult human person. According to them, some of the information for such development is absent in the zygote and is supplied only from the mother after implantation. To support this claim Shannon and Wolter, non-scientists, appeal to an article by C. A. Bedate and R. C. Cefalo. Bedate and Cefalo had argued that postimplantation cellular differentiation and information result from the interaction between embryonic molecules and molecules supplied by the mother; moreover, they had argued that prior to this interaction the developing organism is not internally ordered to become an adult human being and can equally give rise to a nonhuman biological entity, namely, a hydatiform mole.2

Ironically, in the very month — December, 1990 — in which Theological Studies published the Shannon-Wolter article, the Journal of Medicine and Philosophy carried an important article by the Swiss scientist Antoine Suarez, written precisely to show that the claims of Bedate and Cefalo (and, consequently, of Shannon and Wolter) are contradicted, not confirmed, by "recent research" on teratomas and hydatiform moles. In fact, Suarez argues in this article, such research definitively shows that “during pregnancy the embryo does not receive any message or information from the mother able to control the mechanisms of development or to produce the type of cellular differentiation necessary for building the tissues of the new human adult.”3 Quite to the contrary, Suarez contends that recent empirical research supports the conclusion that "the preimplantation embryo is the same individual of the human species (the same human animal) as the adult into whom the preimplantation embryo can in principle develop."4

In short, according to Suarez and in contrast to Shannon and Wolter (and Bedate and Cefalo), the zygote (and the preimplantation embryo) does indeed have within itself the potential to develop into an adult human person; no new molecular information, provided by the mother, is necessary.

Interestingly, the same December, 1990, issue of the Journal of Medicine and Philosophy carried an article by Thomas J. Bole III, a philosopher, written specifically as a response to Suarez’s paper.5 For the most part, in his paper Bole seeks to deny the personhood attributed to the zygote by Suarez on the grounds that it is (a) not a human individual and (b) not a person. In other words, Bole’s principal reasons for criticizing Suarez’s paper are philosophical in nature; they are, in fact, precisely the same as the second and third claims made by Shannon and Wolter — claims that will be taken up in more detail later in this paper. With

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the respect to precise issue of whether the zygote has within itself the information needed to develop into an adult human person Bole’s major point is that, while Suarez is correct in saying that complete hydatiform moles carry chromosomal aberrations, i.e., they result from organisms that cannot properly be said to be true human zygotes, it is nonetheless possible for “partial” hydatiform moles, at least in some cases, to develop from “biologically perfect zygotes.” Bole concludes from this that “because the difference between a child and such a mole must be effected by something in addition to the internal organizational principle of the zygote, the facts support Bedate and Cefalo [and not Suarez].”

It is evident that the issue raised by Bole is primarily empirical in character. If, as he claims (adducing as support a personal communication from James Wheeler, M.D., Assistant Professor of Obstetrics and Gynecology, Baylor College of Medicine), it is true that in some rare instances a “partial” hydatiform mole can develop from a properly formed human zygote, it must be possible to discover the causes. But Bole’s conclusion, so it seems to me, is a non sequitur. No evidence is given to support the conclusion, and it seems at least a priori possible that environmental factors, possibly “information” from the cells of the mother, negatively affect subsequent development of the organism, resulting in a “partial” hydatiform mole. The “facts” in question do not necessarily lead to Bole’s conclusion or support Bedate and Cefalo as opposed to Suarez. More needs to be known about the alleged facts and their proper interpretation.

2. Is the Preimplantation Embryo an Individual Member of the Human Species?

The second claim made by Shannon and Wolter is that the zygote and the preimplantation embryo (or what they prefer to call the “pre-embryo”) cannot be said to be an individual member of the human species. To support this claim they, in company with others, appeal to the fact that prior to implantation all the cells deriving from the zygote are “totipotent” and capable of giving rise to distinct individuals with identical genetic constitution (identical twins). The phenomenon of twinning, of course, has been cited by many as allegedly irrefutable proof that an individually distinct human being cannot be said to exist before implantation. Hence Shannon and Wolter’s appeal to the “totipotency” of the cells derived from the zygote to support their thesis is by no means novel.

But it is important to note that Shannon and Wolter, in developing this part of their argument, rely heavily on the reasoning set forth in great detail by Norman M. Ford in his book, When Did I Begin?: Conception of the Human Individual In History, Philosophy and Science. It is therefore appropriate here to examine Ford’s argument and also the way his argument has been further developed by Michael Coughlan in his book, The Vatican, the Embryo and the Law.

Ford admits that the zygote is a real, biologically identifiable human individual, but contends that it is not “ontologically” the same as the post-implantation embryo and eventual baby. According to Ford, the phenomenon of twinning shows that the zygote has an active potentiality to become one or more human beings. Ford claims that, when the first cell division occurs, the individual
which was the zygote ceases to be. From that point until the primitive streak stage occurs, each of the cells contained within the zona pellucida is a distinct individual. In other words, from the time of the first cell division until implantation a colony or army of biologically identifiable human individuals exists; from this colony one ontologically distinct human individual ultimately emerges. Ford contends that the ontologically distinct human individual comes to be at the primitive streak stage because it is only then that we have a tiny individual with definite shape and recognizable boundaries, a front and back, a right and a left, a head end and a lower end.10

The line of reasoning developed by Ford has been further advanced by Coughlan. According to Coughlan, “from a scientific perspective, the early embryo presents itself as a dynamic structure of human cells with a wide range of possibilities. For example, it could develop into one or more human beings. . . . At its earliest stages, the embryo cannot properly be said to be the individual human being into which it may come to grow, any more than the clay on the potter’s wheel is already a particular pot.”11

Moreover, Coughlan stresses that the embryo, prior to implantation, does not grow — all cell multiplication up to this point is by the successive subdividing of material constituting the original cell. What is really in being, consequently, prior to implantation is a dynamic system of cells, each capable of developing into an adult human being — yet, according to Coughlan, incapable of growth! Once implantation takes place cell differentiation begins, the individual cells lose their totipotentiality, and the growth of the newly formed individual can begin [Coughlan, however, denies that this human individual is a person insofar as it does not have a body yet sufficiently organized — with sense organs, a developed brain, etc. — to serve as the basis for rational activities].12 Coughlan further suggests an analogy: just as an acorn does not become a tree until it is implanted in the earth and germinates, so in the generation of human life an individual human life is not present until the embryo implants into the womb and is capable of growing.13

What can be said by way of response to the arguments of Ford, Coughlan and others, who stress the totipotentiality of the individual cells within the developing preimplantation embryo and point to the phenomena of twinning and of possible recombination?

Several cogent responses, in my opinion, have been made to this line of argument. I would like first to note some pertinent observations of Joachim Huarte, an embryologist at the University of Geneva, regarding the concept of “totipotentiality” when ascribed to the cells of the preimplantation embryo. As we have seen, Ford, Coughlan, Shannon and Wolter and others contend that the individual cells of the preimplantation embryo are “totipotent” and that each can, in appropriate circumstances, develop into an adult human being. But these authors affirm, either explicitly or implicitly, that each individual cell within the preimplantation embryo has an active potential to do so. But, as Huarte notes, the “totipotentiality” ascribed to these cells must be properly understood. While each cell can, in a sense, be considered totipotent, “it would nonetheless be false to consider them as if each were embryos. They can become embryos only if they

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are separated from the original embryo and become independent biological units or if they are artificially severed from it [the original embryo] and are surrounded with a new zona pellucida. It is thus false to say that 'the unicellular or pluricellular embryo is a potential individual or totipotent,' because an embryo is always already in itself an individual of an animal species [the human] from the earliest stages of its development."14 In other words, individual cells of the developing preimplantation embryo are not actually totipotent; they are actually totipotent and capable of developing as new human individuals only after they have been separated, either naturally or artificially, from the embryo of which they are a part. As long as they are integrated within that individual embryo, they must be regarded as its parts; the life they enjoy is the life of the whole human preimplantation embryo, not an independent life of their own.

Second, I believe that the most cogent response to Ford — and thus to Shannon and Wolter and, in large measure, to Coughlan — has been provided by Germain Grisez in his important essay, "When Do People Begin?"

Citing R. Yanagimachi's masterful summary of what is currently known about mammalian fertilization to the effect that "fertilization in mammals normally represents the beginning of life for an individual,"15 Grisez pointedly observes that the evidence does not support Ford's theory that cell division "gives rise to really distinct individuals until a small army of them form the true human individual."16 He observes that Ford seeks to lend his thesis some plausibility by noting that groups of individuals can function toward a common end and that, therefore, the small army of genetically identical cells assembled in the preimplantation embryo can do so too. However, as he then continues, Ford simply ignores a fact about a group of individuals which prevents us from considering the group as a single individual, namely, the fact that they do not even form a physical whole. But, as everyone knows, the developing embryo is a physical whole, undivided in itself.17

Grisez then poses the key question: "Do twinning and so on [recombination, etc.] by themselves show that the 'ontological' human individual comes to be by a substantial change at the primitive streak stage?" What he has to say in reply to this question is worth citing in extenso. He writes:

The phenomena of twinning and chimeras do not. Even Ford does not suggest that all zygotes have the active tendency to become parts of chimeras. If all zygotes had an active potentiality to become twins [as Ford asserts], they would do so unless some accident prevented it. Thus, contrary to what Ford asserts (without argument), in those zygotes which develop continuously as individuals, the facts do not evidence an active potentiality to develop otherwise. Rather, at most the facts show that all early embryos could passively undergo division or recombination.18

As Grisez, Jerome Lejeune, Benedict Ashley, Edgardo Giovanni, and others19 have shown many times, the phenomenon of twinning can be accounted for in terms of an asexual mode of reproduction, similar to cloning. The development of identical twins in no way requires one to conclude that, prior to twinning, no individual human being was present. In fact, the phenomenon makes sense only if there was in being an individual human being to begin with. The fact that an amoeba, for instance, can split and give rise to two amoebas, in no way compels
one to the conclusion that there was no amoeba to begin with. Similarly, recombinaton or the formation of chimeras (if, indeed, this ever occurs in humans), poses no insuperable difficulties.

3. Is the Preimplantation Embryo Not Only a Human Individual but a Human Person?

The third claim made by Shannon and Wolter is again not novel. Like Joseph Donceel and others, they claim that the preimplantation embryo lacks the kind of an organized body required for the infusion of a spiritual, intellectual soul. Or, like more secularist authors, they hold that it is absurd to ascribe personhood to an entity that does not have the capacity to make judgments and free choices —activities typically associated with persons.

This objection, too, has been answered by many authors, among them Grisez, Ashley, and Josef Siefert. Here I wish first to call attention to a remarkable article by Jean de Siebenthal, of the Ecole polytechnique federale de Lausanne concerning the position of St. Thomas Aquinas, to which appeal is made by such authors as Donceel, Coughlan, Shannon and Wolter; then I will note Grisez's critique of this view.

Siebenthal first stresses that for St. Thomas the origin of the human body coincides with the infusion of an intellectual soul. In other words, for St. Thomas human flesh gets its being from the human, intellectual soul. Since Aquinas thought, erroneously (relying on the allegedly biological evidence of his day), that in human generation the male seed was alone the active element, he concluded that the body first formed from maternal blood by this seed was only vegetative; later a substantial change occurred and a new body, this time animal in nature, was formed, to be succeeded finally by a human body, informed by a human, intellectual soul. But note that for St. Thomas the bodies first generated were nonhuman in kind. There was, for him, a radical discontinuity among the bodies successively generated. Siebenthal's point is that Aquinas, were he alive today and aware of the biological evidence disclosed by modern scientific studies, would have no problem whatsoever in concluding that the body that comes to be when sperm and ovum, through their union, cease to be, is that of a member of the human species. It is indubitably a human body, the body of a human being. If it is a human body, then its organizing and vivifying principle can only be a human soul, an intellectual soul. If so, it is a being naturally endowed with the capacities for making true judgments and free choices, although, of course, these capacities cannot be exercised until they have been developed. But on his principles, the being in question is indubitably human precisely because its body is identifiably human, and no human body can be unless inwardly formed by a human or intellectual soul.

In my opinion, Siebenthal has quite accurately summarized the basic principles of St. Thomas relevant to this issue. Those contemporary Catholic authors who appeal to Aquinas's views on "successive" ensoulment, in Siebenthal's judgment, simply fail to appreciate the relevance of his principles, in particular, his principle that a human body, to be human, must be infused by a
human soul, so that one can rightly conclude that, if a particular body is known to be a living, human body, a living, human person is also present in our midst. Thus, since we know that the body that comes to be at the end of fertilization, when sperm and ovum cease to be, is human in kind, we can rightly conclude that the being in question is indeed a human person.

On this matter some arguments elaborated by Grisez are also very pertinent. I will try to summarize them here.

Grisez first notes that advocates of "delayed hominization" like Donceel [and now Shannon and Wolter] attribute "personhood" to the developing living being within the womb once the brain begins to develop. But he goes on to note that "this beginning of the brain's development is not the bodily basis for intellectual activities but only its precursor. Now, if this precursor satisfies the requirements of the hylemorphic theory [to which Donceel and other advocates of this position appeal], there is no reason why earlier precursors should fail to satisfy it. But each embryonic individual has from the outset its specific developmental tendency, which includes the epigenetic primordia of all its organs. Therefore, the hylemorphic theory does not preclude a human zygote's having a personal soul."22

Moreover, developing the same idea that Siebenthal finds rooted in the thought of St. Thomas, Grisez stresses that what is necessary and sufficient to be a human person is to be a whole, bodily individual with a human nature. The normal human zygote is, however, a whole, bodily individual with a human nature; it is not a potential person which will develop into a person if all goes well. Rather, it is an actual human individual body "which, unless he or she cease to be — and this can happen to anyone — will remain the same individual while developing continuously into an adult man or woman." Grisez then concludes: "whatever, remaining the same individual, will develop into a paradigmatic instance of a substantial kind already is an actual instance of that kind."23

Conclusion

In my opinion, the claims made by Shannon-Wolter and others, attempting to show that the human zygote and preimplantation embryo into which it develops is not a human person cannot be sustained when subjected to critical scrutiny. Both scientific evidence and philosophical arguments support, to the contrary, the claim that the human zygote is a human being, a person, and that the preimplantation embryo is (a) the same human individual as the zygote and (b) the same human individual as the postimplantation embryo, the fetus, the neonate, the child, the adolescent, the mature adult, the senile adult writing this paper.

In conclusion, I wish to call attention to the recent and excellent book by Stephen Schwarz, *The Moral Question of Abortion*, insofar as Schwarz develops in depth and with the marshalling of much evidence and many arguments, the position defended here.24

References


4. Ibid., 631. Emphasis in the original.

5. Thomas J. Bole, III, "Zygotes, Souls, Substances, and Persons," *Journal of Medicine and Philosophy* 15 (1990) 637-652. It is, I believe, unusual for a journal of this kind to submit one article scheduled for publication to another author for criticism in the same issue. It seems evident that the editors of the journal, perhaps unhappy with Suarez’s conclusions, wanted them immediately subjected to critique.

6. Ibid., 643.
7. Ibid.
8. Ibid., 650, note 7.


10. Ibid., pp. 139-145. On the formation of the “ontological” human individual at the primitive streak stage see ibid., p. 162; cf. pp. 170-177.


12. Ibid., pp. 58-77.
13. Ibid., pp. 75-76.


16. Ibid., 37.
17. Ibid.
18. Ibid., 38.


20. Jean de Siebenthal, “L'animation selon Thomas d'Aquin,” in *L'Embryon: Un Homme*, pp. 91-98, at 96-97. In stressing this aspect of St. Thomas’s thought, Siebenthal cites texts from *Summa Theologiae*, 1, q. 118, a. 3; 3, q. 6, a. 4, ad 1; 3, q. 2, a. 5; 1, q. 76, a. 4, a. 6, ad 1.

23. Ibid., 40.