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## THE BEGINNING OF PERSONHOOD: A THOMISTIC BIOLOGICAL ANALYSIS

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### ABSTRACT

*“When did I, a human person, begin to exist?” In developing an answer to this question, I utilize a Thomistic framework which holds that the human person is a composite of a biological organism and an intellectualive soul. Eric Olson and Norman Ford both argue that the beginning of an individual human biological organism occurs at the moment when implantation of the zygote in the uterus occurs and the “primitive streak” begins to form. Prior to this point, there does not exist an individual human organism, but a cluster of biological cells which has the potential to split and develop as one or more separate human organisms (identical twinning). Ensoulment (the instantiation of a human intellectualive soul in biological matter) does not occur until the point of implantation.*

*This conception of the beginning of human personhood has moral implications concerning the status of pre-implantation biological cell clusters. A new understanding of the beginning of human personhood entails a new understanding of the morality of certain medical procedures which have a direct affect on these cell clusters which contain human DNA. Such procedures discussed in this article are embryonic stem cell research, in vitro fertilization, procured abortion, and the use of abortifacient contraceptives.*

### INTRODUCTION

In the arena of bioethical enquiry, one of the newest and most controversial subjects is embryonic stem cell (ES cell) research. This research involves the harvesting of stem cells from human embryos. Stem cells are “the primordial, largely undifferentiated cells of an organism. ‘Totipotent’ stem cells are capable of forming all cells of the body. In an early human embryo, each such

cell theoretically has the potential to become a human being.”<sup>1</sup> The potential medical advances that such research provides would be of enormous benefit. The use of harvested ES cells to grow new bodily tissues and organs for those who suffer from diseases requiring organ transplant could virtually eliminate the need for human organ donation. Moral concerns about ES cell research arise from the manner in which the embryos, from which the ES cells are harvested, are produced. For pro-life institutions and organizations, such as the Roman Catholic Church, the use of aborted human fetuses as sources of harvested ES cells is a clear moral wrong. However, there is ambiguity concerning the morality of artificially producing human zygotes<sup>2</sup> which are never destined to be implanted into a uterus; being created for the sole purpose of harvesting their ES cells.

In order to respond to such ambiguity, as well as that surrounding the moral permissibility of other biomedical procedures, I wish to enquire into the beginnings of human personhood. This enquiry is different from the question “When does a human life begin?” As far as human “life” *per se*, it is, for the most part, uncontroversial among the scientific and philosophical community that life begins at the moment when the genetic information contained in the sperm and ovum combine to form a *genetically unique cell*. However, what is controversial is whether this genetically unique cell should be considered a human *person*. In what follows, I will examine both philosophical and scientific endeavors to provide an answer to the question, “When did *I*, a human person, begin?” The

answer to this question will serve as a basic premise for arguing whether the artificial production of embryos for the sole purpose of harvesting their ES cells, as well as certain other biomedical procedures,<sup>3</sup> are morally permissible.

Thomas Aquinas provides a plausible foundation for building a theory of human personhood and its origin due to his persistent focus on the human person as essentially a being composed of the integrated components of intellectual soul and material body. Aquinas, unlike many others of his time,<sup>4</sup> argued that one must consider both the body and the soul of a human being, understanding their interaction, in order to have a complete theory of human *personhood*.

Thus, my approach to the question of human personhood within a Thomistic framework will consider both biological and metaphysical aspects of human persons. As Philip Smith states, “The fact that Aquinas’ metaphysics is grounded in the order that reason discovers in nature rather than imposes upon it, not only allows, but demands that the scientific information on fetal development be incorporated into the discussion on the beginnings of personhood.”<sup>5</sup>

To answer the biological aspect of the question of when human personhood begins, I will refer to the arguments presented by Eric Olson in his book, *The Human Animal*<sup>6</sup> and Norman Ford in his book, *When Did I Begin?*<sup>7</sup> I utilize these two thinkers because they, as I, approach biological data on the beginnings of human life with an eye to the issue of when personhood begins. I

will relate the considered arguments and positions to Aquinas' account of body and soul.

## THOMISTIC METAPHYSICS

A necessary preamble to this discussion is to present and explain the key relevant concepts in Aquinas' metaphysics. The first section concerns Aquinas' understanding of the relationship between *form* (soul) and *matter* (body). This section will include Aquinas' contention that a material human body and the soul (form) which defines it are inseparably linked. The second section will consider Aquinas' metaphysics of *ensoulment*, i.e., the instantiation of a human soul in a human biological organism. In the third section, I will give Aquinas' definition of "person" and briefly compare it with two other conceptions of "person" from Peter Singer and Michael Tooley. This metaphysical groundwork will define the necessary conditions to validly assert, from a Thomistic perspective, whether or not there is a human soul, and thus a human person, present at the earliest stages of biological life.

### *Form and Matter*

Thomas Aquinas held an Aristotelian view with respect to the nature of human persons. The primary characteristic of this view is that a human person is essentially a composite unified being. This means that the *essence* of human personhood is an integration of both of its required components: *form* and *matter*. Form is understood in Aristotelianism to be the defining principle by which

matter takes on a certain *individuated nature*. Form is basically that by which an instance of matter possesses certain defining qualities (e.g., having a particular shape, size, color, texture, smell, ability to reproduce, ability to sense, ability to form abstract concepts, etc.) in an integrated unity. For Aquinas and Aristotle, matter cannot exist without form, and form does not exist apart from matter.<sup>8</sup>

With respect to living beings, there are three types of form and they are all referred to by both Aristotle<sup>9</sup> and Aquinas<sup>10</sup> by the term ‘soul’ (*psuche* and *anima*, respectively). Soul is best characterized as the dynamic unifying principle of a living being’s activities and end (*telos*).<sup>11</sup> There are three different types of soul: *vegetative*, *sensitive*, and *intellective*. Each of these types is defined by its respective set of powers. All three types function as the organizing principle of matter.

The vegetative soul is found in plants and all higher biological organisms.<sup>12</sup> It endows them with the powers of life, nutrition, and growth. The sensitive soul is found in animals and human beings. It endows them with the powers of sensation, imagination, and awareness of particular objects. The intellective soul is found only in human beings and is the principle of endowment of the powers of rational thought, as well as the human biological powers proper to the functioning of the intellective soul.

The soul is the form of the body for living beings. It is the organizing principle of all physical aspects of living beings. All types of form are essentially

integrated with the matter they inform. They cannot exist separate from matter. Thus, the essence of human personhood requires both the form and the matter together; i.e., the presence of a human person requires that there be matter (a body) organized as an individual *human* body by an intellectual soul (the appropriate form of a human person).

Another aspect of the Thomistic/Aristotelian relationship of form and matter is that form *individuates* matter. Without form, there is no distinction between one instance of matter and another. In fact, Aquinas contends that such “prime matter” (i.e., matter without form) does not exist. All instances of matter are informed and each is thus a separate individual from other instances of informed matter. Therefore, to say that there is an instance of informed matter is to say that there is *an individual substance*. The body of a plant, informed by a vegetative soul, is distinct from the body of another plant which is informed by a numerically different vegetative soul. With respect to humans, a human body which is informed by an intellectual soul is distinct from another human body which is informed by a numerically distinct intellectual soul.

### *Metaphysics of Ensoulment*<sup>13</sup>

Each of the three type of soul consists of a unique set of powers and these powers correspond to certain biological capacities and functions. I assert that the relation of psychological instantiation (ensoulment) to biological instantiation is accomplished by matching the powers of the soul with the corresponding

biological capacities which the soul informs. Aquinas argues for this position that the powers of the soul and biological capacities correspond to each other in the *Summa Theologiae* Ia., Q. 90, A. 4, ad. 1: “as the soul is naturally the form of the body, it was necessarily created, not separately, but in the body.”<sup>14</sup>

I do not intend by this to say that the biological capacities precede the powers of the soul. In fact, Aquinas and Aristotle explicitly argue the reverse. I merely contend that if certain powers of the soul are actualized, then the corresponding biological capacities will be actualized. By *modus tollens*, if the biological capacities are not actualized, then the corresponding powers of the soul are not actualized.

When is the human soul instantiated in the matter of the biological organism? In the Thomistic/Aristotelian framework, form (soul) must metaphysically, but not temporally, precede matter (biological organism), because it is the form which defines the nature of the matter. Thus, the soul informs the nature of the biological organism not before, nor after, but *at the same moment* as the biological organism is instantiated. As Philip Smith points out,

Since [the soul] is the organizing principle of a living organism, the substantial form is the source of a being’s internal unity and the root of its specific activity and growth. Thus, while we cannot directly experience this form, we can infer its reality by observing a being’s activity. . . . By examining a thing’s operations, we can

learn something about the source of its operations or its substantial form.<sup>15</sup>

To understand what kind of form (soul), informs the matter of a particular organism, we must observe the activities of that organism. The presence of activities proper to a particular type of soul allows the inference of the presence of that type of soul.

For example, if an organism is observed to have the capacity to respire, reproduce, take in nutrition, etc., it can be concluded that it is informed by a vegetative soul. If an organism is observed to not only be alive, but also has the capacity for sensory awareness of its environment and has the proper sensory organs, then one can conclude that it is informed by a sensitive soul. Finally, if an organism is observed to be alive, capable of sensation, and has, or is developing, the organs necessary for intellectual thought, then that organism can be said to be informed by an intellective soul -- the one type of soul that, for Aquinas, defines a person.

#### *Definition of Personhood*

Aquinas adopts the definition of “person” that Boethius’ offers in his treatise *Contra Eutychem et Nestorium* III. The best English translation of the technical definition is “individual substance of a rational nature.”<sup>16</sup> The two key relevant terms are ‘individual’ and ‘rational.’ I interpret Aquinas as intending, by the use of these two terms, that a person must consist of *one, ongoing ontology*



and a *soul* which endows it with the power of *rationality*, i.e., intellect. Hence, for Aquinas, a person is an *individual, continuous biological organism informed by an intellectualive soul*.

Included in this definition of “person” is the contention that the mere presence of the intellectualive soul is sufficient for personhood. The actualization of all of the soul’s essential *powers* of personhood is not necessary. That is, the informed biological organism need not be *actually* capable of rational thought for it to be considered a person. Aquinas, in this respect, differs from Peter Singer, who contends that personhood is not acquired until the biological organism *actualizes* the essential powers of personhood, *viz.*, rational thought, autonomous choice, self-consciousness, etc. For Aquinas, the endowment of the essential powers of personhood is sufficient for actual personhood.

Aquinas’ conception of the necessary conditions for personhood seem to be in agreement with Michael Tooley’s understanding of personhood. On p. 146 of his book *Abortion and Infanticide*,<sup>17</sup> Tooley summarizes his position concerning the necessary and sufficient conditions for personhood. Of the four essential qualities of personhood that Tooley identifies (having a non-momentary interest, rationality, being an agent, and self-consciousness), not one of them is considered by him to be a necessary condition for personhood; though, he holds that having a non-momentary interest and being an agent may each, in themselves, be a sufficient condition for personhood. It seems as if Tooley and

Aquinas are in agreement that the essential qualities, or powers, of personhood need not be actualized for a person to be present. Tooley and Aquinas also seem to be in agreement when Tooley asserts at least one necessary condition for personhood: “a continuing mental substance.”<sup>18</sup> Although Aquinas does not hold the human intellectual soul (considered by itself) to be a “substance,” in the technical Aristotelian understanding of that term, he does contend that psychological (mental) continuity is necessary for personhood in the sense that there must be the continuous presence of an human intellectual soul.

With this Thomistic metaphysical framework in mind, I will now present the arguments of Olson and Ford as to when the biological requirements of ensoulment are met. The basic requirement is an ongoing, ontologically unique, biological organism which, in its activities, exemplifies the powers of the intellectual soul.

#### OLSON AND THE BIOLOGICAL APPROACH

Olson holds that the continuous existence of a human biological organism is necessary and sufficient for personhood. In a Thomistic framework, however, I contend that the continuous existence of a human biological organism is necessary, but not sufficient, for personhood. As already described above, for Aquinas, the instantiation of an intellectual soul informing the biological organism is also necessary for personhood. However, while I disagree with Olson on this point, his arguments for the beginning of the continuous existence of a

human biological organism are salient, because the continuous existence of such is a necessary component of human personhood for Aquinas.

Olson argues that the beginning of a human person as an individual living continuous<sup>19</sup> biological organism is

when the cells that develop into the fetus (as opposed to the placenta) become specialized and begin to grow and function in a coordinated manner. They develop bilateral symmetry around the ‘primitive streak’, the ancestor of the spinal cord. At this point, twinning is no longer possible: cutting away half the cells would not result in two smaller living embryos, but would simply cause death. . . . Only at this point do we have a multicellular organism and not merely a mass of living cells stuck together.<sup>20</sup>

The key to Olson’s argument for the beginning of a human person not occurring before this point in fetal development is the *totipotency* of the mass of cells that make up the blastocyst before it becomes implanted in the uterine wall.

“Totipotency” means that, prior to implantation, each cell or group of cells has the power to separate from the rest of the zygote, divide by cellular mitosis, and develop into a multicellular organism. It is due to this totipotency of pre-implantation cells that identical twins, triplets, etc., are able to occur. One or more cells break away from the cluster, divide (mitosis), and develop into a second (or third, fourth, etc.) organism. Since each cell or group of cells is its

own unique individual biological entity and has the capacity to separate and develop into a distinct multicellular biological organism, it cannot be said that there is already an individual human organism at this point. In potentiality, there are, practically speaking, one or a few individual human organisms present.<sup>21</sup>

One could respond to this conclusion by asserting that there is one individual human organism in potentiality, if the case were that twinning did not occur. I argue that this response fails because, before the point at which twinning becomes impossible, there is both the potential for a single organism and for multiple organisms to develop. Neither potentiality is any *more potential*, or closer to being actual, than the other. In other words, any zygote has the potential to twin, prior to implantation. One may argue that one of the potentialities would have an advantage over the other if there were some type of genetic encoding for twinning that determines whether or not it will occur. However, at the present time of scientific discovery, it is not known whether such is the case or not.

#### FORD AND THE BIOLOGICAL APPROACH

Olson builds his case upon the work done by Norman Ford in his book, *When did I Begin?* I will give a brief outline of Ford's arguments against the human individual beginning prior to implantation and the formation of the "primitive streak."<sup>22</sup> Then, I will relate Ford's (and Olson's) conclusion to Aquinas' metaphysical account of ensoulment.

Ford begins with the argument in favor of the human individual beginning at the moment of fertilization.<sup>23</sup> The basic case being made is that there is strong biological evidence that an *ontologically* and *genetically* unique individual human organism begins a career of biological development at the moment of fertilization.<sup>24</sup> Ford counters that, at the moment of fertilization, there is only a genetically distinct biological entity, not an ongoing ontologically distinct entity:

Biologists speak about one's genetic or biological identity or genome being established at fertilization. This is unique for each individual. Except in the case of identical twins, no two persons have the same genetic constitution or genotype. . . . [But] the genetic code in the zygote does not suffice to constitute or define a human individual in an ontological sense. Identical twins have the same genetic code but they are distinct ontological individuals.<sup>25</sup>

The first cell which results after fertilization is complete has a unique genetic identity and a unique ontological identity *as a biological cell*. However, it does not have a unique ontological identity *as a human being*. This is due to there existing, after the first mitotic event, two cells which have the same *genetic* identity, but are *ontologically* distinct. The same follows for every event of cellular mitosis until the point is reached when mitosis can no longer occur which results in ontologically distinct beings, i.e., identical twinning is no longer possible.

One could counter that twinning does not lead to the conclusion that there is not an ontologically unique individual to begin with, if it were the case that the second (twin) ontological individual grows out of the material of the first without the first losing its ontological status. I contend, however, that this does not seem to be a likely case since there is no way to differentiate the two different ontologies. Cells remain undetermined for quite some time as to where they will go and what role they will play in the developing organism. The same indeterminism can come into play in some cases of twinning in which the two organisms share cell clusters for a great deal of the developmental process.<sup>26</sup> To which organism each set of cells will ultimately go is largely undetermined. Therefore, there is both a sharing of ontology and a lack of completely individuated ontology in each organism.<sup>27</sup>

There is another important implication of the indeterminacy factor for the cells of the zygote. A great number of the zygote's cells, when they become differentiated from other cells, are utilized to form extraembryonic material (trophoblast).<sup>28</sup> These cells do not contribute to the "embryo proper." Only the cells in the ICM (Inner Cell Mass) are differentiated from those that form the trophoblast to form the embryo itself. Furthermore, there is no strict determiner for which cells will form the trophoblast and which will form the ICM. Ford points out that it is just a matter of which cells are spatially located in relation to

other cells and the outer membrane (zona pellucida) that places different cells into one of the two sets.

The stage at which this differentiation has occurred is called the *morula* stage. Ford argues that, as I indicated above,

at the morula stage, it is extremely difficult to establish the presence of the sort of unity that would be required for the cluster of cells to be an actual ontological individual. There does not appear to be any strict commitment or rigid predetermination in cells from the earliest cleavages to become the inner cells. . . . The relatively independent behaviour of the individual cells, together with the indeterminate and uncommitted nature of their developmental potential within the cluster of cells as a whole, seems to be incompatible with the individuation of the morula itself as a distinct ontological individual.<sup>29</sup>

In a separate article, Ford contends that “it is only at the primitive streak stage that specific cells are destined to form the entire embryo and fetus. This means that the cells within the zona pellucida are not yet sufficiently activated to form one integrated living body.”<sup>30</sup> Based on experiments conducted that resulted in *chimeric* sheep (i.e., a sheep formed out of “the cells of genetically dissimilar embryos”), Ford concludes “that purposeful development [from a zygote to an embryo] occurs *between* cells rather than *within* a multicellular individual.”<sup>31</sup>

However, the question now arises that once the cells have differentiated at the end of the morula stage into the trophoblast and ICM, could it be said that the ICM constitutes an ongoing ontologically unique individual? Ford states that there is still indeterminate differentiation that occurs as the zygote implants itself in the uterine wall.<sup>32</sup> Some of the cells of the ICM, formed before implantation, will not, in the end, form part of the embryo proper, but will form extraembryonic material.<sup>33</sup> Thus, it still cannot be said that there is a unique individual entity until all the cells which will contribute to the formation of the embryo proper are determined to that end and no other. Prior to strict cell determination, there are more than one entity present in the zygote, embryo proper and extraembryonic material, and they are not able to be completely differentiated from each other.

Another way of approaching this issue is to argue that the entire “new biological entity”<sup>34</sup> is the human organism. Couldn’t it be said that the embryo proper, placenta, umbilical cord, and any other extraembryonic biological material together constitute one unique human organism? If this is the case, then the human organism, at the moment of birth, removes a significant portion of itself (the embryo proper) from the placenta, and, after a time, completely sheds the placenta and umbilical cord which are no longer necessary.<sup>35</sup>

Ford, however, rejects this possible scenario because he sees no reason for considering the placenta as a part of the embryo proper that is discarded after birth. He cites two supporting reasons: 1. When a baby is still-born, we do not



mourn for the placenta and bury it along with the rest of the baby; 2. In some non-human mammals, a placenta will form even in cases where no embryo is present. Thus, the placenta is best considered as a separate biological entity from the embryo proper. It is the embryo proper alone that will continue to develop into an infant and adult human being.

Now, I will present Ford's argument for when the human person does begin<sup>36</sup> and will follow with a Thomistic account, compatible with Ford, of the event of ensoulment.<sup>37</sup> According to current biological data, fourteen to nineteen days after fertilization, the new biological entity has completed the implantation process in the uterine wall. By this point, all cells are determined as to whether they will form part of the embryo proper or extraembryonic material. The key event which occurs next is the formation of the primitive streak and the beginning of the functioning fetal heart. This indicates the presence of a new unique self-sustaining human individual that will grow and develop into an infant and adult human being which are numerically identical to it. Furthermore, twinning is no longer possible after the formation of the primitive streak. The last possible occurrence of twinning is if two primitive streaks are formed.

Ford sums up his position and refers to *ensoulment* for the first time:

The appearance of the primitive streak is an important landmark, indicating the position of the embryo proper with the main features of the new individual's body plan. *This appears to be the stage of*

*development when the cells of the epiblast first become organized through this primitive streak into one whole multicellular individual living human being, possessing for the first time a body axis and bilateral symmetry. Its developing cells are now integrated and subordinated to form a single heterogeneous organic body that endures with its own ontological as well as biological identity through all its subsequent stages of growth and development. A new human individual begins once the matter of the epiblastic cells become one living body, informed or actuated by a human form, life-principle or soul that arises through the creative power of God. The appearance of one primitive streak signals that only one embryo proper and human individual has been formed and begun to exist. Prior to this stage it would be pointless to speak about the presence of a true human being in an ontological sense. A human individual could scarcely exist before a definitive human body is formed. As mentioned earlier, the formation of an ontological individual with a truly human nature and rational ensoulment must coincide.<sup>38</sup>*

While Ford's insistence on a "definitive human body" here may seem arbitrary, I hold that it is precisely what is required in a Thomistic framework. For Aquinas, in order to say that there is a human person, there must, at minimum, be an

intellective soul informing a human body. The minimum requirements of a “definitive human body” are what is at issue in Ford’s discussion and this article. The answer is that a definitive human body exists when there is biological material present that will, in the absence of interruption in the natural course, develop into an adult human biological organism and *nothing else*. As Ford argues, before the formation of the primitive streak, there is biological material that will naturally form things other than an adult human biological organism, e.g., extraembryonic material or a possible second adult human biological organism.

The presence of such material that does not belong to the embryo proper may *prima facie* not seem like a threat to the metaphysical argument that there is a “definitive” embryonic human body present amidst the extra material. One may argue that the inability to differentiate which cells of the zygote will constitute extraembryonic material and which will constitute the embryo proper is merely an epistemological problem and has no bearing on the metaphysical reality that there is a definitive human body present within the cell cluster. I disagree with such an argument, because the epistemological problem of differentiating which cells will constitute which entity (embryo proper, twin embryo, or extraembryonic material) is due to the lack of a metaphysical determining factor for cell differentiation. *Contra* what my interlocutor may argue, there is no metaphysical fact-of-the-matter concerning which cells constitute the embryo proper which is merely not

known, or knowable, by current scientific understanding. The only metaphysical fact-of-the-matter concerning the differentiation of pre-implantation cells is that they are *not* differentiated in any way. It is merely due to chance occurrence that some cells, rather than others, will end up in the proper position to be cells of the embryo proper.<sup>39</sup> There is no hidden metaphysical mechanism of cell determination present in the zygote.

Accepting Ford's and Olson's accounts of when occurs the instantiation of a unique individual human biological organism which will maintain biological continuity across its development into an infant and adult, my final concern is to relate this biological answer to a psychological answer to the question of when personhood begins. I have argued above that, for a Thomist, a complete account of personhood must include both the biological and psychological factors that constitute a human person. The soul is the set of endowments and powers which actualize the biological and psychological activities that constitute the human body and intellect.

#### THOMISTIC ANSWER TO WHEN ENSOULMENT OCCURS

According to Ford and Olson, the human soul is instantiated at the end of implantation when the primitive streak begins to form. It is only at this point that the activities proper to the human intellectual soul are observed.<sup>40</sup> However, it is not necessary to say that *all* of the soul's powers must be actualized at that moment. The actualization of the soul's different powers occurs as the

corresponding biological capacities develop. Another reason that it is not until the point of implantation that there can be said to be instantiation of the intellectual soul is due to the requirement that there be *individuated* matter present. Prior to implantation, the cluster of cells do not form a unique individual entity. Rather, they are a collection of several individual entities. Because of the remaining possibility of twinning, there cannot be said to be one individual instance of matter, i.e., one body. There are possibly two or more bodies present. Therefore, it cannot be said that there is one intellectual soul informing the matter of the zygote. Once implantation occurs, twinning is no longer possible, and cell differentiation between the embryo proper and extraembryonic material is complete, the instance of matter that is the embryo proper can be said to be an *individual* instance of matter, informed by *one* form, *viz.*, the intellectual soul.

At the formation of the primitive streak, there is a living biological organism, capable of nutrition and growth,<sup>41</sup> developing the earliest biological tools necessary for sensation, imagination, and rational thought (being that all of these powers are tied to the brain and spinal cord that develop from the primitive streak). Therefore, at this point, the powers proper to the vegetative type of soul are actualized (life, nutrition, growth) and the powers proper to the sensitive type of soul are informing the biological organism to develop the tools necessary to actualize the powers of sensation and imagination. Also, the powers proper to the intellectual type of soul are informing the same development in order to actualize

the power of rational thought.<sup>42</sup> The specific powers of sensation and intellection are not themselves actualized until the required organs begin to function. However, the soul itself is active by informing the body to develop the required organs. Therefore, I conclude that the human person is instantiated as an individual complete biological organism with the powers of life, sensation, and rational thought (i.e., a being with both a body and a human intellectual soul) at the moment the primitive streak begins to form, division of the organism (i.e., twinning) is no longer possible, and cells which form the embryo proper are determined to that end and no other.

I wish to note here, as Smith does on p. 206 of his article, that the point of implantation is merely used as the reference point for when the primitive streak begins to form and twinning is no longer possible. There is no apparent causal influence of the event of uterine implantation over the possibility of twinning. Twinning is the key to determining an embryo's being an individual substance informed by an intellectual soul. Therefore, if it were discovered that twinning was still possible after implantation, say up until the second trimester; then, my argument would be that there is no intellectual soul, or human person, present until the second trimester. Such a contention would present a problem of reconciling the lack of an intellectual soul with the formation of the primitive streak, which would still occur at implantation and is an activity proper, I have argued above, to the intellectual soul. However, the fact-of-the-matter is that

twinning is not possible after implantation and this corresponds to the formation of the primitive streak. That these two key events coincide is supporting evidence that both events are due to the fact that it is at this point that the intellectual soul is instantiated in the embryonic matter.

### *The Nature of the Zygote*

One matter I must now address concerns the nature of the zygote. Before there exists the developing individual biological organism, there exists, in its place, a cluster of cells, dividing and differentiating among themselves, which contain *human* DNA. Based on the evidence and arguments presented above, I contend that this cell cluster can best be understood as human biological *material*, but not a unified living human organism. There is no soul informing this cluster of cells which constitute the zygote. It is merely biological material which contains human DNA. One reason I make this contention is that each cell of the cluster does not exist as an *self-sustaining* biological organism. Although each cell operates independently of the other cells in the cluster (and has the capacity to be separated from the other cells, divide, and form a new cell cluster), it is not a *viable* biological organism operating under its own internal life-principle (vegetative soul). If that were the case, then the cell would be able to take in nourishment and sustain its own existence as single-celled amoebae have the capacity to do. However, this is not the case. Removed from the special environment provided by the different components of the female reproductive

system, these cells would not be capable of sustaining their own existence and would quickly die.<sup>43</sup>

In adopting this stance toward the nature of the zygote, I am departing from strict Thomistic embryology. However, this departure is necessary and justified because Aquinas did not have the benefit of the embryological data available today. Aquinas<sup>44</sup> contends that there is a vegetative soul informing the zygote from the moment of conception. However, this vegetative soul is not numerically identical to the set of vegetative powers of the intellective soul; i.e., Aquinas contends that there is no intellective soul present at this point. Aquinas holds that this vegetative soul is later annihilated and replaced by a sensitive soul which includes both vegetative and sensitive powers. This soul is later annihilated and replaced by the intellective soul which includes vegetative, sensitive and intellective powers. As one can see, I could maintain allegiance to Aquinas' view and still hold the thesis that the zygote does not contain an intellective soul. However, holding that there is a vegetative soul informing the zygote implies that it is a *unified* living organism. This is inconsistent with the arguments of Ford and Olson, which have led to the conclusion that there is not a unified organism extant before implantation. Therefore, having adopted Ford and Olson's position, I must depart from Aquinas on this issue.

### *Two Types of Potentiality*



At this point, I must pause to introduce a technical distinction in Thomistic metaphysics: the distinction between a *passive potentiality* and an *active potentiality*. This is best illustrated by example. Every time a heterosexual couple engage in genital sexual intercourse without the interference of any natural or artificial contraceptives, each ejaculated sperm has the potential to fertilize an ovum, if present, and cause a new biological entity to begin to form. This is an example of a *passive potentiality*, and the entity which can be figuratively said to exist in this fashion is far removed from the actualized biological organism which possesses an intellectual soul and is on the developmental path toward full actualization of the essential powers of human personhood.

Here is another illustrative example. If I am sitting at home watching TV, I have the potential to get up and walk to the store. But, if I am already walking down the street in the direction of the store with the intention to complete my journey to the store, that is a different type of potentiality (one much closer to actualization). This latter type of potentiality is an *active potentiality*; as opposed to a *passive potentiality*.

The term ‘passive’ is used because the actualization of the relevant capacities requires an extra component (what Tooley terms a “positive causal factor”)<sup>45</sup> to act upon the subject so that the subject may actualize its relevant capacities. In the case of the sperm, its potential for actualizing a new human person depends upon the presence of an ovum to act upon it with its set of

chromosomes. In the case of my walking to the store, while I am sitting in my chair, an extra component, *viz.*, a decision to get up and go the store, is required for me to actually get up and go to the store. However, if I am already walking to the store, then this decision is already present. Only an additional component, e.g., my deciding not to finish walking to the store or some barricade blocking me from getting to the store (what Tooley terms a “negative causal factor”),<sup>46</sup> can prevent my potential for completing my journey to the store from being actualized.

With these distinctions in mind, I assert that a sperm or ovum which exists independently of the other only has a *passive potentiality* for human personhood. I further contend that a fertilized zygote also has only a *passive potentiality* for human personhood, which implies that it is not yet an actual person. Why? Because, in addition to unique genetic identity (which the zygote does possess), ongoing ontological identity is required (which the zygote does not possess since it is capable of twinning into two or more distinct ontologies); and the latter is only achieved by the addition of another positive causal factor, *viz.*, the intellectual soul.<sup>47</sup>

Therefore, until the moment when twinning is no longer possible, there is no actual human person present, because there is no basis for contending that there is a human soul informing the matter of the zygote. Nevertheless, it seems counter-intuitive to assert that both a sperm cell and a fertilized zygote share the

same type of potentiality. One tends to think that there is an important difference between the two types of biological material, even though they both require the addition of a key positive causal factor to become a unified human biological organism.

Tooley offers a solution to this dilemma by recognizing that there is a *range* of passive potentiality. Two things may both have only a passive potentiality to be something else, but one of the two may be *closer* to actualizing that potentiality than the other. How? One may have a need of fewer positive causal factors to fulfill its potentiality. In this case, the sperm first requires union with an ovum, and then instantiation of an intellectual soul, to fulfill its potentiality for human personhood. The fertilized zygote has already achieved union with an ovum, it requires only the instantiation of the intellectual soul to fulfill its potentiality. Thus, it could be contended, in agreement with the general intuition, that the fertilized zygote is, to a large degree, closer to being an actual human person than the sperm cell is. In fact, one could say that, since the zygote has the requisite DNA programming, it has an active potentiality *for further biological development* toward becoming the individual human biological organism which is informed by the intellectual soul. However, it would still have only a passive potentiality for *human personhood* -- since it requires the additional positive causal factor, *viz.*, the intellectual soul.

ETHICAL IMPLICATIONS

I will now proceed to address the ethical implications that follow from the conception of a zygote as having merely a passive potentiality for personhood. I wish to first note that, while the zygote is not a human *person*, it is still *human* in the sense that it contains a complete set of human DNA. Thus, as stated above, it could be said that the zygote, while having only a passive potentiality for personhood, has an active potentiality for biological development toward becoming a human biological organism which is informed by an intellective soul. Due to this active potentiality for human biological development, I contend that the zygote should not be treated frivolously.<sup>48</sup> Nothing should interfere with the natural process of cell mitosis and differentiation unless it has a commensurate value. Defining what outcomes would be of commensurate value is a separate and daunting task. I follow with a couple examples of morally contentious acts which may have a commensurate value to the that of the zygote.

#### *ES cell Research*

Richard Doerflinger, the associate director of the pro-life activities office of the National Conference of Catholic Bishops (NCCB), has suggested that “supposing that the laboratory-produced stem-cell clusters are not true human embryos but only resemble them . . . the research could go forward.”<sup>49</sup> Doerflinger and the NCCB may contend that the human zygotes produced *in vitro* for the purpose of ES cell harvesting are indeed truly human by re-asserting the Roman Catholic Church’s claim that inviolable human life begins at the

completion of the process of conception. My argument, however, is that even if such laboratory-produced zygotes do contain human DNA in the cells that constitute the cluster, that is not sufficient for claiming that there is either an actual human person present, or a potential human person present -- "potential" in the sense of an active potentiality. Such laboratory-produced ES cell clusters would resemble a human person only in terms of being potential persons in the sense of a passive potentiality.

#### *In Vitro Fertilization*

Allowing a woman to conceive and bear children of her own and her partner's genetic makeup is a good thing. However, the process of *in vitro* fertilization and implantation of zygotes into the uterus, by which a woman who would otherwise be unable to conceive children of her own can do so, has the consequence of allowing the destruction of a small number of fertilized zygotes.<sup>50</sup> But, if the above thesis is true, then there has been no loss of human life. What was destroyed in this process was human biological material which was not informed by an intellectual soul. Such zygotes have none of the endowments associated with the intellectual soul, even in active potentiality. At most, they are potentially (in the sense of passive potentiality) the recipients of an intellectual soul -- nothing more.

Furthermore, we can take into account the scientific evidence that a number of fertilized zygotes do not implant in the uterus following conception.

The result is a natural (spontaneous) abortion. Since this is the case, it seems odd to believe that God (or whatever agent is responsible for creation) would permit the needless death of so many persons. It seems more reasonable to conceive of them as naturally rejected biological material -- not persons.

*Procured Abortion and Abortifacient Contraceptives*

With respect to the abortion issue, my thesis is not practically applicable since procured abortions cannot occur until after the mother is aware that she is pregnant. Usually, implantation and the instantiation of an intellective soul have occurred by that point. However, my thesis could be used to argue in favor of the use of certain artificial contraceptives that are morally rejected otherwise. Some people accept the moral permissibility of using artificial contraceptives such as condoms or spermicidal jelly, but object to the use of an IUD or the “morning-after” pill, because they function as abortifacients, i.e., they cause spontaneous abortions.<sup>51</sup> According to my thesis, for such people, artificial contraceptives which function as abortifacients would be morally permissible, if the contraceptives are utilized to achieve an end of commensurate value; for the spontaneous abortion occurs before the implantation process begins,

An example of a case in which there may be justifiable use of such contraceptives involves a schizophrenic woman who is on medication (e.g., haldol) which would likely lead to severe limb malformation of the fetus if she should become pregnant. In this case, it seems better that she not become

pregnant. Therefore, the use of abortifacient contraceptives (which have a higher success rate of preventing pregnancy than other contraceptives, such as condoms) may be justified considering that preventing the birth of a severely physically deformed child is commensurate with the loss of a zygote which has only a passive potentiality for becoming a human person.

## CONCLUSION

As is apparent, this combination of scientific discovery and philosophical reflection does not provide a definitive answer to the issue of the beginning of human personhood and the moral implications thereof. However, a plausible and coherent Thomistic conception of human personhood and its origins sheds light upon the critical subject of morally evaluating certain relevant actions under a natural law, deontological, or utilitarian ethical system.<sup>52</sup>

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<sup>1</sup> Russell Shaw 'Moral Concerns Persist on Stem-cell Research' *Our Sunday Visitor* 87/40 (1999), p. 3.

<sup>2</sup> Such zygotes are "human" in that they contain human DNA. I am differentiating the terms 'embryo' and 'zygote' in the sense that 'embryo' refers to the developing human organism present after the blastocyst (cell cluster) has implanted in the uterine wall and begun to develop primitive tissues and organs. 'Zygote' refers to the pre-implantation biological material which consists of a cluster of cells from the moment of fertilization until the completion of the implantation process, at which time the embryo becomes distinct from the placenta and other extraembryonic material. Thus, whenever I utilize the term 'zygote', the adjective 'pre-implantation' is understood.

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<sup>3</sup> Some of the other issues I will address in this paper include *in vitro* fertilization, procured abortion, and the use of artificial contraceptives which function as abortifacients, i.e., cause the spontaneous abortion of a fertilized zygote to occur within the uterus.

<sup>4</sup> E.g., the Manicheans, who actually pre-date Aquinas by several centuries but still had influence in the 13th century, held that only the *spirit* (i.e., soul) defined what a human person is, that the physical body was a hindrance to that spirit, and that a person should make every attempt to remove themselves from their corporeal prison. They even went so far as to argue against procreation, claiming that it was a great evil to take part in trapping another spirit into a body.

<sup>5</sup> Philip Smith 'The Beginning of Personhood: A Thomistic Perspective' *Laval Theologique et Philosophique* 39/2 (1983), pp. 197-8. Cf. Thomas Aquinas *Commentary on Nicomachean Ethics* Vol. 1: Bk. I, Lect. 1, C. I. Litzinger, trans. (Chicago: Henry Regnery Co., 1964), p. 6.

<sup>6</sup> Eric Olson *The Human Animal: Personal Identity Without Psychology* (New York: Oxford University Press, 1997).

<sup>7</sup> Norman Ford *When Did I Begin?* (New York: Cambridge University Press, 1988).

<sup>8</sup> An illustrative example utilized by Aristotle in his *De Anima* is that of a seal imprinted on wax. The seal *informs* the wax to take on a definite shape and texture that allows an observer to recognize the seal in the wax. The seal does not exist separate from the wax (one cannot physically abstract the seal from the wax), nor can the wax exist without having the shape and texture of the seal, or some other shape and texture.

<sup>9</sup> Cf. Aristotle *De Anima*.

<sup>10</sup> Cf. Thomas Aquinas *Summa Theologiae* Ia., Treatise on Man.

<sup>11</sup> I am grateful to Fr. John Kavanaugh, S.J. for suggesting this characterization of "soul." Understanding the soul in this way allows for it to be considered either as a *substance*, in the Aristotelian sense, or as merely a collection of attributes. For more on this debate concerning the



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nature of the soul in Aristotle, cf. Herbert Granger *Aristotle's Idea of the Soul*, Philosophical Studies Ser. 48 (Netherlands: Kluwer, 1996).

<sup>12</sup> I believe that if Aquinas and Aristotle had access to today's biological knowledge, they would be inclined to include bacteria, amoebae, and the like in their set of living organisms with a vegetative soul.

<sup>13</sup> 'Ensoulement' refers to the moment that the human soul informs the matter of the human body.

<sup>14</sup> Thomas Aquinas *Summa Theologiae* Vol. 1, Fathers of the English Dominican Province, trans. (New York: Benziger, 1948), p. 461.

<sup>15</sup> Smith, pp. 203-4. The term 'substantial form' is a technical term used by Aquinas which I have not utilized in this article. Simply understood, the substantial form of a thing 'x' which is of kind 'F', as opposed to what can be called an *accidental* form of 'x', is that which is the organizing principle of 'x' such that 'x' is 'F'. Without the substantial form which informs the matter of 'x', 'x' would not be 'F'. For an example of this, substitute 'x' with 'Socrates' and 'F' with 'human.' For the purposes of this article, one can equate a human person's substantial form with what I have termed the 'human soul' or 'intellective soul.'

<sup>16</sup> Cf. Thomas Aquinas, *Summa Theologiae* Ia., Q. 29, A. 1. Boethius' original Latin is "*naturae rationabilis individua substantia.*"

<sup>17</sup> Michael Tooley *Abortion and Infanticide* (Oxford: Clarendon Press, 1983).

<sup>18</sup> Tooley, p. 146.

<sup>19</sup> Olson is primarily concerned with the question of one's continuous personal identity. I agree that such continuity is a key factor in the matter of defining personhood. However, having already established that the basic Thomistic requirement of personhood is a suitable biological organism informed by an intellective soul, the additional requirement of continuity is not specifically addressed in this article. Keep in mind, however, that Olson's arguments for the biological

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beginning of human personhood presupposes the requirement of continuity. Thus, I presuppose it as a basic requirement as well.

<sup>20</sup> Olson, p. 91.

<sup>21</sup> Theoretically, there are an infinite number of potential individual organisms; if each cell separated, began to develop, and then split apart again before implantation, and so on *ad infinitum*. This is biologically impossible, though.

<sup>22</sup> The “primitive streak” is a group of cells that divide the developing organism symmetrically. The primitive streak will eventually develop into the brain and spinal cord.

<sup>23</sup> “Fertilization” occurs when the 23 chromosomes from the sperm cell unite with the 23 chromosomes from the ovum.

<sup>24</sup> Referring to a “moment of fertilization” is somewhat inaccurate, since the joining of sperm and ovum is a process. However, one can refer to a “moment” when the two sets of 23 chromosomes cease to exist as two distinct sets and become one set of 46 chromosomes. This, too, may be a process of fusion; in which case, the “moment” would be best considered as the completion of the process.

<sup>25</sup> Ford 1988, p. 117.

<sup>26</sup> In the case of “joined twins” (a.k.a., Siamese twins), the two organisms continue to share cell clusters (now in the form of organs and tissue at the end of the gestational period). In these cases, we say that there are two distinct ontologies, but it is still difficult to differentiate where one ends and the other begins due to the overlap in shared organs such as a heart or liver. However, this difficulty in differentiation does not entail it is not possible at all to demarcate two distinct bodies. One could contend that differentiation of the two bodies can be made due to distinctions in the control of organ functions by the two individual brain systems.

<sup>27</sup> Cf. Ford 1988, pp. 133-5.

<sup>28</sup> Cf. Ford 1988, p. 124.

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<sup>29</sup> Ford 1988, pp. 148-9.

<sup>30</sup> Norman Ford 'Fetus' *Encyclopedia of Applied Ethics* Vol. 2, Ruth Chadwick, ed. (San Diego: Academic Press, 1998), p. 291.

<sup>31</sup> Ford 1998, p. 292.

<sup>32</sup> Cf. Ford 1988, p. 161.

<sup>33</sup> Fr. Kavanaugh pointed out to me that we could perhaps say the same thing with respect to fingernails or hair. Does the fact that these parts of our body are eventually discarded upset the developed organism's biological unity? If not, as would seem to be the case, then this argument cannot be used against the ICM being a biological unity. I respond, however, that the two cases are not analogous. Fingernails and hair are, at one time, part of the developed organism's body, and then at some later time are discarded and no longer part of that body. The undifferentiated cells of the ICM, however, because they are undifferentiated, can never be said to be part of the embryo proper.

<sup>34</sup> This refers to all the biological components that have formed since fertilization. It includes both the embryo proper and all extraembryonic material.

<sup>35</sup> This scenario, with reference to the placenta and umbilical cord being shed from the organism after a certain amount of time, concerns what would happen naturally if there were no medical intervention in the birth and developmental process (i.e., the umbilical cord is not artificially severed, thereby dividing the embryo proper and the placenta before a natural process would have done so).

<sup>36</sup> Ford's account is the same as Olson's.

<sup>37</sup> Cf. Ford 1988, ch. 6.

<sup>38</sup> Ford 1988, pp. 171-2; italics original.

<sup>39</sup> As was reported above, Ford's biological data indicates that spatial location plays a role in ultimately determining which cells form what entities. However, there is no metaphysical

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determining factor which dictates the proper spatial location of each cell. As cells move around in the blastocyst formation, nothing but random chance places them in whatever spatial location at which they end up.

<sup>40</sup> The following paragraph highlights what these observed activities are.

<sup>41</sup> Before implantation and the presence of a unified human biological organism, there is human biological material which contains human DNA, but is not informed by an intellective soul.

<sup>42</sup> By distinguishing the different types of soul, I am not asserting that there are three souls present. I am merely marking out, as Aristotle and Aquinas do, the different sets of powers proper to the different types of soul. It should be understood, however, that there is *one* human soul which consists of all of these sets of powers.

<sup>43</sup> This is the same case as that which concerns the cells present in a human hair follicle. If the follicle is removed from the body, the cells will continue to live for a short period of time, but quickly perish because they are no longer sustained by the vegetative powers of the human soul.

<sup>44</sup> Cf. Thomas Aquinas *Summa Theologiae* Ia., Q. 118, A. 2, ad. 2.

<sup>45</sup> Cf. Tooley, pp. 166-8; n. 47 below.

<sup>46</sup> Cf. Tooley, pp. 166-8; n. 47 below.

<sup>47</sup> This contention that the zygote has only a passive potentiality for personhood is in agreement with Tooley's conception of "passive potentiality" presented on pp. 166-8 of *Abortion and Infanticide*. Tooley states that an object 'x' has only a passive potentiality for acquiring a property (in this case, personhood) if other things could act upon it in such a way as to bring about the acquisition of the property. Tooley implies in this statement that 'x' does not contain within itself all of the *positive causal factors* (i.e., factors which are necessary for 'x' to do something, viz., acquire the property of personhood). My Thomistic account agrees with this notion in that I hold that the human intellective soul must act on 'x' (i.e., the zygote) by informing it with the essential powers of personhood as active potentialities, which will be actualized as the developmental

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process continues, guided by the soul. Without the intellective soul, the zygote goes not have all of the positive causal factors required for it to acquire personhood. In fact, it is lacking the *key* positive casual factor -- the intellective soul.

<sup>48</sup> Ford makes a note of this way of considering the zygote as bestowing upon it more moral weight than the sperm or unfertilized ovum: “Others believe respect should be shown to a nonpersonal early embryo [zygote] which, on account of its genetically human life and genome, has the inherent developmental potential to become a human individual and person, thanks to the support of the mother’s favorable uterine environment. It is claimed that this intrinsic potency and proximity to becoming an actual human individual and person suffice to establish a duty of moral respect. This claim is greater when it is coupled with a belief in the sanctity of the formative process established by God” (Ford 1998, pp. 292-3).

<sup>49</sup> Shaw, p. 3.

<sup>50</sup> In the *in vitro* procedure, a small number of fertilized zygotes (usually between 3 and 5) are injected into the woman’s uterus. With luck, one may implant itself in the uterine wall and begin to develop into a human organism. The other, unimplanted, zygotes are naturally ejected from the woman’s body during her period -- spontaneous abortion. Those who have a strong pro-life ethic (e.g., the Roman Catholic Church) argue against the moral permissibility of *in vitro* fertilization for this reason, among others.

<sup>51</sup> The Roman Catholic Church univocally rejects the use of any type of artificial contraceptive, irrespective of whether or not it functions as an abortifacient. Thus, my contention in this section is not addressed to the Church.

<sup>52</sup> I cite these specific ethical systems because they are widely held by contemporary philosophers and the thesis of this article has moral implications for evaluating relevant actions within all three systems. I am grateful to Fr. John Kavanaugh, Dr. Janet Smith, Miguel Endara, and referees of

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