

# Thomas Aquinas and the Generation of the Embryo: Being Human before the Rational Soul

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Boston College  
The Graduate School of Arts and Sciences  
Department of Philosophy

THOMAS AQUINAS AND THE GENERATION OF THE EMBRYO  
BEING HUMAN BEFORE THE RATIONAL SOUL

a dissertation

by MELISSA ROVIG VANDEN BOUT

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Abstract: “Thomas Aquinas and the Generation of the Embryo: Being Human before the Rational Soul”

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Thomas Aquinas is generally viewed as the chief proponent of the theory of *delayed animation*, the view that the human embryo does not at first have the rational soul proper to human beings. Thomas follows Aristotle’s embryology, in which an embryo is animated by a succession of souls. The first is a nutritive soul, having the powers of growth, nutrition, and generation. The second is a sensitive soul, having the additional powers of locomotion and sensing. The third and final soul is the human, or rational soul, which virtually includes the nutritive and sensitive souls. Because Thomas holds that there is only one substantial form of a composite, none of these forms overlap to provide continuity. It is therefore exceedingly difficult to speak of the embryo as one enduring subject through the succession of souls. Moreover, because of the way that the nutritive soul is associated with plants, and the sensitive soul is associated with animals, interpreters generally hold that for Thomas the embryo is first a plant, then an animal, and with the advent of the rational soul, finally a human being.

Those who write about the ontological status of the embryo assume that delayed animation necessarily entails *delayed hominization*, that is, that the embryo only becomes human at a later stage of its development, when it receives the rational soul. Those who hold a delayed animation view of the embryo often invoke Thomas’ schedule of successive souls in the embryo as a model for viewing it as not yet human in early stages

of development, linking hominization to the ability to perform intellectual operations. That Thomas specifies that a body must be sufficiently organized before the advent of the rational soul seems to them to solidify their view of the embryo as not sufficiently organized to be truly human. Additionally, even outside of an explicitly Thomist framework, Thomist metaphysical principles are often invoked in arguments that center on twinning and totipotency of blastomeres in the early embryo, and whether that early embryo is one individual if it is potentially many. Those who hold *immediate animation* views (i.e., the embryo receives the rational soul at once, with no mediate states) often adopt the strategy of importing modern data on the internal organization and self-directed development of the embryo, and argue that if only Thomas had known that the zygote was not unformed and undifferentiated, that it has within itself all it needs to become a mature adult human, he would have held that the embryo is immediately suited to receive the rational soul, and thus is human from conception. In this way they attempt to employ a change in scientific data to negate the need for a succession of forms in the embryo.

The author identifies the being of the human embryo as a prior metaphysical problem within Thomas' work, and advances a different interpretation of his views: that the embryo, even before the advent of the rational soul, is human. To establish this claim, she traces the problems which emerge in the current debate about when the embryo becomes human, and argues that contrary to expectation, it is not necessary to equate immediate rational animation with immediate hominization, demonstrating that all other approaches yield results entirely untenable for Thomas. A survey of texts reveals that Thomas did in fact view the embryo as human before the rational soul, though he does not methodically work out the implications of that view in a number of areas. Moreover,

a distinction based on a passage in Aristotle's *Generation of Animals* with regard to an additional meaning of *generation* may resolve the ambivalence in Thomas' account of the embryo as passive under the formative power of the father's semen. Finally, a third meaning of generation is offered to show that Thomas recognized and wished to resolve the difficulty of explaining the continuity and identify of the embryo in the succession of souls. What results is an immediate hominization view of the embryo that, because it accommodates Thomas' succession of souls and does not depend upon importing modern biological data on the embryo, is consistent with Thomas' account, and is thoroughly cognizant of the way Thomas viewed human nature and the final end of human being.

*for all my babies,*

*from Joy and Luke to Jenna and Samantha*

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*“Until the fetus has a human soul, it is not a human being...”*  
 -Robert Pasnau<sup>1</sup>

## Chapter 1: The Human Embryo as a Philosophical Problem

### Introduction

At one point or another, we have all wondered about the beginnings of human life. It seems almost magical: a male releases semen in a fertile female, and if all goes well, mere weeks later she notices that her body is changing in a thousand subtle (and not so subtle) ways. In another few months she can feel movement in her body that is not of her body but of another. A few more months, and she gives birth to an infant. We now know considerably more than we used to about what occurs between coitus and birth, but even with all of our high powered microscopes, with IVF and cloning and 3-D ultrasounds which reveal whether baby has inherited the family nose, we are no closer to a consensus about when human life begins. In fact, it seems that the more we understand the minutia of the mechanisms of conception and embryonic development, the more we contest the *what* and *when* of that which has been conceived. As Norman Ford puts it in the title of his book, “When did I begin?”<sup>2</sup>

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<sup>1</sup>Thomas Aquinas on Human Nature: A Philosophical Study Of *Summa Theologiae* 1a, 75-89, (Cambridge, U.K. : Cambridge University Press, 2002), 109.

<sup>2</sup> Norman M. Ford, *When Did I Begin? Conception of the human individual in history, philosophy and science*, (Cambridge: Cambridge University Press, 1988). Our overwhelming concern, of course, has not generally been to find out when each of us began, but at what point we must treat the new, growing organism as a person in moral and legal contexts. We have sometimes asked about what it means to be human, but usually only with regard to embryonic states or perhaps the existence of those near death or not manifesting certain ‘human’ attributes such as sentience. It seems to me a very strange thing to limit a discussion about beginnings and endings and human nature to the very extremes, as if the bulk of human living were indifferent to the meaning of human existence, and as if human life, whenever it begins and wherever it ends, were not all “of a piece.”

In this discussion about human embryos, scholars and laypersons alike have turned to the thought of Thomas Aquinas for clarity, guidance, or even as a foil for their own perspectives.<sup>3</sup> Thomas holds a unique position in Western thought. He more than anyone has effected a reconciliation of the Greek tradition with the Christian. For centuries he has been regarded with a special respect by the Catholic communion in particular, and in that role his voice carries much weight in modern conversations about the legality and morality of things like abortion, cloning, in-vitro fertilization, and embryonic stem cell research.<sup>4</sup> He is the framer of an enduring structure of metaphysics, which endures to this day in varied forms. Yet it is not only his role in the history of philosophy or his authority among the faithful that make him important, but also the possibility that we may be able to reconcile his synthesis with modern developments without undue violence, for though in his work he attempts to explain all of reality, it remains an open system.<sup>5</sup> Work by Thomists like Etienne Gilson and Bernard Lonergan

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<sup>3</sup> For the purposes of this book, I will generally employ the term ‘embryo’ with less than scientific precision, in keeping with the philosophical tradition regarding the subject matter. Therefore, while it may be more appropriate in another context to differentiate carefully between a human zygote, morula, blastula, gastrula, etc., for our purposes they will be included within the broader category of embryo, which shall be employed to mean that period of development between the end of fertilization before the first cell division, and the point at which the entity may be properly referred to as a fetus at eight weeks gestation, though even this marker need not be precise for the purposes of this discussion. Thomas has been commonly understood to have viewed the rational soul as informing the embryo near the time it becomes a fetus. Most interpreters give 40 days for animation of male embryos and 90 for female, following a passage in Aristotle’s *History of Animals* (VII.3.583b3-5) in which he describes a tendency in males to manifest movement discernible to the mother (often referred to as “quickening”) around the fortieth day, and in the female at nearer ninety days. A few lines later, Aristotle refers to this period as the time in which “the embryo begins to resolve into distinct parts, it having hitherto consisted of a fleshlike substance without distinction of parts.” (583b10) It is this distinction of parts which proves so important for both Aristotle and Thomas. Thomas seems to refer to this text in *Scriptum Super Libros Sententiarum*, Bk. III, dist. 3, q. 5, a. 2, *Responsio*. The forty day timeframe is popularized in late antiquity, and later taken up as a standard in jurisprudence and penitential recommendations as an indicator of the presence of soul and thus human life, and described as “formed” in contrast to “unformed.”

<sup>4</sup> Thomas was named Doctor of the Church by Pope Pius V in 1568. In August 1879, Pope Leo XIII issued the encyclical *Aeterni Patris*, encouraging, among other things, a return to Thomist philosophy.

<sup>5</sup> Jacques Maritain writes that “[t]here is a Thomist philosophy; there is no neo-Thomist philosophy” and further, “Thomism claims to use reason to distinguish the true from the false; it does not wish to destroy but

demonstrate the possibility of and set the precedent for this small attempt to stand with Thomas and use his insights into the nature of the universe to make sense of dilemmas he could not have foreseen.

Though this work –to understand well—is ongoing, it behooves us to pay attention to the difference between his context for writing about the embryo, and our own. Let us not pretend that no time has passed, that the world has not changed. In a sense, we may be asking the ‘wrong’ question of him when we glibly expect the saint to weigh in on modern attempts to understand the embryo. After all, “[t]he thirteenth century did not share today’s obsession with abortion,”<sup>6</sup> and Thomas is always sensitive to context. His writing is peppered with such phrases as “with regard to” and “in one sense.” We shall attempt to be as precise. On the other hand, if we take care to account for the good Doctor’s own concerns and interests on the matter, we may expect to understand what he has said regarding the embryo only that much more accurately, and expect that when we then turn our gaze to the modern problem of the embryo, we will see that much more clearly. Later in this work, we will attempt to do just that by eschewing the pattern of most of the secondary literature on the subject, and ask of Thomas a different question: one that, though he has not himself asked and answered it in so many words, is one that he *can* answer from where he stands in the thirteenth century, and one that better suits his intellectual habit than do the questions he has more recently been asked on the embryo, as if no time had passed, and as if he had the same vested interests in the outcome as both sides of the embryo debate.

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to purify modern thought, and to integrate everything true that has been discovered since the time of Saint Thomas.” In *St. Thomas Aquinas*. (Cleveland: World Pub. Co., 1958), 17, 19.

<sup>6</sup> Daniel C. Maguire, from his address in February 1987 to the theology department at the University of Notre Dame, later printed in *On Moral Medicine: Theological Perspectives in Medical Ethics*, 2<sup>nd</sup> edition. Eds. Stephen E. Lammers and Alle Verhey, (Grand Rapids, MI: Eerdmans Publishing Co., 1998), 589.

### Thomas and the Debate: The Soul of the Embryo<sup>7</sup>

Whether he is cited as an authority on the metaphysics in question, referenced as the Church's premier theologian, caricatured as impossibly outmoded, lampooned as misogynist, or trotted out as a straw man, Thomas is generally portrayed as holding the view that an embryo only becomes human at a rather late point in its development: when it is sufficiently organized to receive a rational soul. That is, he is taken to be a proponent, and perhaps the chief proponent, of what has been termed *delayed animation*, the idea that an embryo only receives the rational soul after it has already come into being. This perspective is set in opposition to *immediate animation*, the view that an embryo comes into existence by and with the rational soul already, with no mediate state or states. In the literature, the question of the timing of hominization, that is, of becoming *human*, is presented as synonymous with the question of the timing of the arrival of the soul: delayed or mediate hominization entails delayed animation. Likewise, saying of the embryo that it is immediately animated necessarily indicates that it is immediately hominized.<sup>8</sup> As bioethicist Carol Tauer put it, "It has always been accepted Catholic teaching that the presence of the human soul conferred human status. As its departure marked the death of the human being, so its assumption into the body marked the beginning of the life of the human being."<sup>9</sup>

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<sup>7</sup> See David Albert Jones' book by the same title for a treatment on the timing and manner of ensoulment within the Christian tradition: *The Soul of the Embryo: An enquiry into the status of the human embryo in the Christian tradition*, (New York: Continuum, 2004). Cf. John Connery, S. J., *Abortion: The Development of the Roman Catholic Perspective*, (Chicago: Loyola University Press, 1977).

<sup>8</sup> That is, with the human and therefore rational, spiritual soul.

<sup>9</sup> Carol Tauer, "The Tradition of Probabilism and the Moral Status of the Early Embryo," *Theological Studies* 45 (1984), 8.

One can easily understand the impetus behind the prevailing interpretation of Thomas as holding a delayed animation view of the embryo. Thomas follows Aristotle's embryology in ascribing to the embryo first a nutritive or plant-like soul, which is then supplanted by a sensitive, or animal-like soul, which in its turn is usurped by a rational soul, the form proper to a human being.<sup>10</sup> Aristotle put it this way:

... nobody would put down the embryo as soulless or in every sense bereft of life (since both the semen and the embryo of an animal have every bit as much life as a plant), and it is productive up to a certain point. That they then possess the nutritive soul is plain...As they develop they also acquire the sensitive soul in virtue of which an animal is an animal...For e.g. an animal does not become at the same time an animal and a man or a horse or any other particular animal. For the end is developed last, and the peculiar character of the species is the end of the generation in each individual.<sup>11</sup>

In light of this and a number of similar passages, it is difficult to imagine how the embryo can be identified as human before the advent of the rational soul. How can the embryo be human when its form, its animating power, only manifests life appropriate to a plant or later, an animal? Thomas does not explicitly tell us whether or not the embryo is human at early stages, nor does he employ a precise nomenclature by which to distinguish embryos before rational animation from those animated by nutritive or sensitive souls. Thomas does offer a number of descriptions of the early embryo's status at different points of its development. For example, when discussing Christ's assumption of flesh, he remarks that "it is not human flesh before it has a rational soul."<sup>12</sup>

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<sup>10</sup> The nutritive soul is sometimes also referred to as *vegetal* or *vegetative*. Soul, whether nutritive, sensitive, or intellectual, is the first act of a natural, organic body that is potentially alive. (Aristotle, *On the Soul* II.1.412a27) For both Thomas and Aristotle, it is the difference between a living body and a corpse. It is that which animates matter, making it alive, to *be* at all, to be one, and to exist *as* an individual member of a species. It is the form of the (plant, animal, or human) body. (*Summa Theologica* Ia.76.1.)

<sup>11</sup> *Generation of Animals* II.3.736a30-736b3. Unless otherwise noted, all Aristotelian text translations from *The Complete Works of Aristotle, Revised Oxford Translation*, ed. Jonathan Barnes, (Princeton: Princeton University Press, 1984).

<sup>12</sup> *Summa Theologica* IIIa.6.4. Unless otherwise noted, all Thomas texts from the translation by English Dominicans (London: Burns, Oates, and Washbourne, 1912-36).

To Thomas, as for so many others, being rational is the hallmark of being human, and it is this trait which is the specific difference between human and other beings comprising the genus *animal*; in Thomas' words, "it is by his reason that a man is what he is."<sup>13</sup> Throughout his work, a reference to what is rational becomes shorthand for what is human. In the first part of his *Summa Theologica*, he lists the various types of souls and ranks them:

"...the higher we advance in the nobility of forms, the more we find that the power of the form excels the elementary matter: as the vegetative soul excels the form of the metal, and the sensitive soul excels the vegetative soul. Now the *human* soul is the highest and noblest of forms."<sup>14</sup>

When we might expect him to speak of the rational or intellectual soul, terms he employs earlier in this passage, he refers to such a soul as the *human* soul. To be fair, a human being is the only sort of being that can possess a rational soul; all other corporeal beings are not rational, and non-corporeal rational beings such as angels possess no material which needs animating. Yet it is striking that, in this and similar passages, he treats the terms human soul and rational soul as interchangeable.

It has become such a commonplace to equate the rational soul with humanity that even in a more general and less specifically Thomist context, one might take their synonymy as a matter of course. For example, in a chapter on the timing of ensoulment, David Albert Jones sketches a number of options "as to when a human being may be said to acquire a rational soul, or, to put the matter in another way...when the life of a human being may be said to begin."<sup>15</sup> Whether encountered in a technical or a popular context, the idea that a being's humanity is co-extensive and equivalent with its possession of a

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<sup>13</sup> *Ibid.*, IIIa.9.2.

<sup>14</sup> *Ibid.*, Ia.76.1. Emphasis added.

<sup>15</sup> *Soul of the Embryo*, 109.

rational soul is generally understood to be self-evident and is often identified as the natural foundation for debate on the embryo and related matters. Indeed, the terms *delayed hominization* and *delayed animation* are generally employed interchangeably, as are their opposites: *immediate hominization* and *immediate animation*.

This human, rational soul is unlike a vegetative or sensitive soul in a number of ways. By virtue of its power, once the rational soul exists, it continues to exist, because the act proper to it, intellection, does not depend upon the continuing existence of a body.<sup>16</sup> That is, since it has a power proper to itself and which surpasses the body it forms, when the body is corrupted, the intellectual soul remains. As such, it is a subsistent rather than a merely substantial form, not only actuating the material so that it exists as a body, but also surviving the eventual death of the body.<sup>17</sup> Because it is a subsistent form, the intellectual soul does not arise naturally from the disposition of matter or from any other agency but is created directly by God.<sup>18</sup>

Many of the more vocal players on the delayed animation side of the debate<sup>19</sup> buttress their views by locating Thomas as on their side or in their corner, as it were;

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<sup>16</sup> See, for example: *Summa Theologica*. I.75.2-6.

<sup>17</sup> ST Ia Q. 89, A. 1.

<sup>18</sup> ST Ia Q. 90, A. 2. God's direct involvement in creating the rational soul is certainly striking and meaningful, but we would do well to avoid imputing to Thomas any Deist tendencies with regard to his views on the way God is connected to His creation. For Thomas, "[God's] efficient causality extended to everything that took place, insofar as he concurred as primary cause in everything done by his creatures, and conserved them all in existence. The focal reference through efficient causality was thereby all-pervasive." To put it simply, it is not only the rational soul that has its existence from God's causality. (From the Cambridge Companion to Aquinas, ch2 "Aristotle and Aquinas" by Joseph Owens, p. 46.)

<sup>19</sup> Chief among these are Canon Henri de Dorlodot, *Darwinism and Catholic Thought*, trans. Ernest Charles Messenger, (New York: Benziger Brothers, 1922); Joseph Donceel, "Abortion: Mediate V. Immediate Animation," *Continuum* 5 (1967) and "Immediate Animation and Delayed Hominization," *Theological Studies* 31 (1970); Daniel A. Dombrowski and Robert Deltete, *A Brief, Liberal, Catholic Defense of Abortion*, (Urbana, IL: University of Illinois Press, 2000); and Robert Pasnau, *Human Nature* and "Souls and the Beginning of Life (A Reply to Haldane and Lee)" *Philosophy*, Vol. 78, No. 306 (Oct., 2003). For an alternative perspective regarding the "scandal" of Thomas holding a delayed animation view of the embryo in contrast to the views of the Church, cf. John Haldane and Patrick Lee, "Aquinas on Human Ensoulment, Abortion, and the Value of Life," *Philosophy* 78.2; and Craig Payne, *Why a Human Fetus is a Person From the Moment of Conception: A Revisionist Interpretation of Thomas Aquinas's Treatise on*



delighted that such an august authority agrees with them against the current position of the Church in today's culture wars over abortion:

Defenders of what is currently the dominant Catholic view are scandalized that we ever took an alternative position, according to which the human embryo only attains full human status after a period of development. They are even more troubled by the fact that no less a theologian than Aquinas defends this view. Much ink has been spilled to show that this view is an aberration, or at best a reflection of Aquinas's imperfect knowledge of human biology. If Aquinas knew what we know about the development of the embryo, he too would defend the official Catholic view--that at least is the argument. In this way, it is suggested that what looks like a real diversity of views within the Catholic tradition is not really an instance of diversity at all; the earlier view is dismissed as the result of ignorance about facts.<sup>20</sup>

Others choose to focus instead on such phenomena as twinning, totipotency, and wastage during early cell division, finding proof that the early embryo, at least, cannot yet be a human being or even an individual at all.<sup>21</sup>

Still others paint Thomas as holding a delayed hominization view accidentally, or as an unfortunate but unavoidable result of his dependence upon Aristotle's embryology. For example, Normal Ford takes Aristotle's teleology as reason enough to do away with the awkwardness of separate stages between the vegetal soul and the sensitive soul in Thomas' account, wishing to postulate instead that the sensitive soul be present from conception but only actually operating at the vegetal level. As "the embryo must be

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Human Nature, (Lewiston, NY: Edwin Mellen Press, 2010). I believe that, given the high profile of the discussion and its popularity even outside of scholarly circles, there can hardly be a conspiracy to hide the fact that Thomas is a proponent of delayed animation.

<sup>20</sup> Porter, Jean. "Is the Embryo a Person? Arguing with the Catholic traditions," *Commonweal* 129.3 (2002), 8.

<sup>21</sup> Cf. Carlos A Bedate and Robert C. Cefalo, "The Zygote: To Be or Not to Be a Person," *Journal of Medicine and Philosophy* 14 (1989); Lisa Sowle Cahill, "The Embryo and the Fetus: New Moral Contexts," *Theological Studies* 54 (1993); Jason T. Eberl, "The Beginning of Personhood: a Thomistic Biological Analysis," *Bioethics* 14 (2000); Norman M. Ford, *When Did I Begin?*, (Cambridge: Cambridge University Press, 1988; Richard A. McCormick, "Who or What is the Preembryo?" *Kennedy Institute of Ethics Journal* 1 (1991); Jean Porter, "Individuality, Personal Identity, and the Moral Status of the Preembryo: A Response to Mark Johnson," *Theological Studies* 56 (1995); Thomas A. Shannon and Allan B. Wolter, "Reflections on the Moral Status of the Pre-Embryo," *Theological Studies* 56 (1995); Philip A. Smith, "The Beginning of Personhood: A Thomistic Perspective," *Laval théologique et philosophique*, 39.2 (1983).

oriented to develop in a specific way from the beginning,” he reasons, “the higher functioning soul may be present from the earliest stages, but actually with regard to vegetative powers and only potentially with regard to other powers.”<sup>22</sup> Likewise, many interpreters attempt to rescue Thomas from himself by inserting modern insights from developmental biology. For instance, Jones suggests that, if only new scientific information were taken into account, Aquinas’ metaphysical principles would yield a *different* account of the embryo, namely, that “the embryo is a human being from the time that the sperm and ovum fuse.”<sup>23</sup> John Haldane and Patrick Lee hold a similar position: in their view, if only Thomas had known that the embryo, even at its earliest stages, was as highly organized as it is, he would have held an immediate animation position.<sup>24</sup>

Roughly speaking, the recent and current lines of the debate circling around Thomas and the embryo follow one of these three paradigms: (1) Thomas is *the* proponent of delayed animation, and all immediate animation positions are a result of either discredited seventeenth century science or Cartesian mind-body dualism; (2)

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<sup>22</sup> *When Did I Begin*, 32. This solution to the problem is hardly novel; it bears a striking resemblance to that opinion of Gregory of Nyssa which Aquinas refutes in the course of considering whether the rational soul is brought into being by creation or transmitted in the semen. (*On the Power of God* 1.3.9) To be quite clear, this is Ford’s presentation of immediate animation, a position he once held but not longer did at the writing of the book in question. It is to his credit that in many ways his presentation of a view he can no longer hold is perhaps among the very best explanations of immediate animation. He indicates that he might still hold this position, if only he could resolve the difficulties posed by twinning and totipotency in the early embryo.

<sup>23</sup> *The Soul of the Embryo*, 173. For similar Thomist immediate animation accounts, see also Benedict Ashley, “A Critique of the Theory of Delayed Animation,” *An Ethical Evaluation of Fetal Experimentation: An Interdisciplinary Study*, eds. D. McCarthy and A. Moraczewski, (St. Louis, MO: Pope John XXIII Center, 1976); Stephen J. Heaney, “Aquinas and the Presence of the Human Rational Soul in the Early Embryo,” *The Thomist* 56 (1992); Mark Johnson, “Delayed Hominization: Reflections on some recent Catholic Claims for Delayed Hominization,” *Theological Studies* 56 (1995); John Haldane and Patrick Lee, “Aquinas on Human Ensoulment, Abortion and the Value of Life” *Philosophy* 78 (2003); Juan R. Velez, “Immediate Animation: Thomistic Principles Applied to Normal Ford’s Objections,” *Ethics & Medicine*, 21.1 (Spring 2005).

<sup>24</sup> John Haldane and Patrick Lee, “Aquinas on Human Ensoulment, Abortion and the Value of Life” *Philosophy* 78 (2003), 268.

Thomas is clearly a proponent of delayed animation, and modern science confirms his metaphysical insights regarding the embryo; or (3) Thomas did hold a delayed animation view, yet if only he had known what we now know regarding the development of the embryo, he would instead argue that the embryo is immediately animated and thus possesses the rational soul upon the close of conception. Approach (1) is commendable in its willingness to take an outdated embryology seriously in expectation that metaphysical insights of the good Doctor will still tend to hold true, yet those who take this tack tend to isolate the problem of the embryo from overarching Thomist commitments to the peculiar character of nature as a cause, to the intelligibility of being and the priority of understanding in light of final cause, and to human nature as oriented toward an incommensurate end. Several key voices in this corner also tend to conflate form with ‘look’ in a troubling way, all the while attributing to intellectual adversaries the very shortcoming from which this approach suffers. Approach (2) is less explicitly Thomist, focusing instead on the implications of specific biological data, and operating from a superficially Thomist position regarding unity and individuality. It is not in itself problematic that leading figures in this approach are sometimes less specifically situated in a Thomist context, but given that the arguments put forward are often susceptible to relatively basic Thomist critiques on those same questions of unity and individuality, it seems reasonable to address this position in such fashion. Finally, approach (3), while Thomist in the sense that Thomas is demonstrably committed to the intelligibility of the natural world, is not Thomist in another sense, in that they have not asked the question of Thomas as he *was*, but only as he *might* be, were he to alive now rather than eight centuries ago.<sup>25</sup> If the project at hand is to find out what Thomas did or even could have

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<sup>25</sup> Cf. this passage from his *Commentary on the Nicomachean Ethics*: “There is one order that reason does

said about the embryo, it does no good to attempt to excise obsolete data (for it was *his* data) and drop him, willy-nilly, into a foreign context with no allowance for a little disorientation.<sup>26</sup> Though much may be learned from this approach, we will not learn what Thomas believed about the embryo. Each of these trends, with these and other attending limitations, will be explored in more depth and with more precision in later chapters. It begins to emerge, however, that there are further questions to ask about Thomas and the embryo, and the need arises to look more closely at the possibilities open to him regarding the being of the embryo, and at the implications of such views within his philosophy rather than within the current milieu.<sup>27</sup>

### Context for Thomas' Treatment of the Embryo

Regarding when the embryo becomes human, Thomas himself does not articulate either the question or his answer as we should perhaps like; his concerns lie elsewhere. When he treats of the embryo, it is generally as a test case for his position on single rather than plural substantial forms, one of the most intensely argued and divisive topics of his day. His intellectual opponents, Franciscans prominent among them, were able to easily explain the growth of a human being from conception to birth in terms of a series of supervening forms, one added to another in a process of perfection, with no need for the

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not establish but only beholds, such is the order of things in nature... The function of natural philosophy is to consider the order of things that human reason considers but does not establish — understand that with natural philosophy here we also include metaphysics.” Trans. by C.I. Litzinger, O.P., Vol. 1. (Chicago: Henry Regnery Co., 1964), Book 1, Lecture 1, p. 6.

<sup>26</sup> This third approach, most common for those holding an *immediate animation* position, does, I think, have quite a bit to offer to the modern debate on what we ought to *do* regarding embryos. But it is easy to understand why this strategy feels like ‘wishful thinking’ to those holding a *delayed animation* position. It is commendable that those who use what I have called Approach (3) clearly communicate that they are arguing, not what Thomas actually held, but what he might have held.

<sup>27</sup> Any answers or attempt at answers will unavoidably bear on the matters of abortion, cloning, etc.; I do not wish to be coy, but merely to avoid “skipping ahead.” Moreover, I believe that even more than the way the embryo debate bears upon abortion, the most important aspect of this debate is the way that the question of human beginnings demands we wrestle with the meaning and goal of human living.

previous form to be corrupted, as if an embryo were like a pearl, growing layer by layer within an oyster. In this manner it was relatively easy to explain how the tiny organism manifesting only vegetal or animal life could continue to develop into a being with the rational capacity that marks human life. By contrast, Thomas' theory of the unity of subsistent forms, when married to the Aristotelian embryology prevalent in his day, demanded that he categorize embryonic development as being marked by the animation of three different kinds of soul, none of which might overlap to provide continuity.

Daniel Callus writes that the problem that transfixed Western scholars in the thirteenth century, this debate over the unicity or plurality of substantial forms, first arose at least as early as the opening of the thirteenth century and that it did so in the context of an anthropological problem: how is it that man possesses the life and powers appropriate not only to human being but also to that of plants and animals?<sup>28</sup> “The starting-point was whether the nutritive, the sensitive and the rational principles in man are one soul, one substance, or three distinct souls or substances.”<sup>29</sup> It was Thomas who grasped the metaphysical import of the debate, and worked out its implications in every sphere, from theology to biology. When he treats of the embryo, his concern is that of a metaphysician and an Aristotelian, keen to demonstrate that a thing has both its being and its unity by its form, and that, even in the extreme and difficult case of the human embryo, it is still true that “For each individual thing is one on the same basis on which it is a being.”<sup>30</sup> In a passage from *On Spiritual Creatures*, Thomas gives an overview of first his opponents' view and then his own on the matter:

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<sup>28</sup> “The Origins of the Problem of the Unity of Form” *Thomist* 24 (1961), 260.

<sup>29</sup> *Ibid.*, 259.

<sup>30</sup> *On Spiritual Creatures* 3.

For some say that there are many substantial forms in the same individual, and that one of these is the substrate of another; and on this view prime matter is not the immediate subject of the ultimate substantial form, but underlies it, with intermediate forms acting as media, so that matter itself, viewed as subject of a form, is the proximate subject of the second form; and so on down to the ultimate form. Thus, then, the proximate subject of the rational soul is the body perfected by the sentient soul, and to this latter is united the rational soul as a form. The other opinion is that in one individual there is but one substantial form; and on this view it is necessary to say that through the substantial form, which is the human soul, this individual has not only "being man", but "being animal", and "being alive", and "being body", and "substance", and "being." And thus in this particular man no other substantial form is prior to the human soul, and consequently neither is any accidental form; because in that case one would have to say that prime matter is first perfected through an accidental form rather than through the substantial form, which is impossible: for every accident must be grounded on some substance.<sup>31</sup>

Thomas is sure that there can be only one substantial form in an individual, or else there can be no individual. As John F. Wippel has it,

if substantial form communicates substantial existence to matter and the matter-form composite, a plurality of substantial forms would result in a plurality of substantial existences and would, therefore, undermine the composite's substantial unity. If the first substantial form gave substantial existence, all other forms could contribute only accidental *esse*.<sup>32</sup>

Given that the prevalent embryology of the day identifies stages of growth in which an embryo exhibits the powers and life of lesser beings (for even animal embryos first manifested plant-like powers of growth and nutrition) one can appreciate the difficulty Thomas faces when treating of the embryo.

In fact, it is very difficult to understand how the embryo can be understood as one being at all, formed as it is, at different times, with different souls, each in their turn the

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<sup>31</sup> *Ibid.*, 3.

<sup>32</sup> "Metaphysics" from *The Cambridge Companion to Aquinas*, edited by Norman Kretzmann and Eleonore Stump (Cambridge: Cambridge University Press, 1993), 112.

embryo's substantial form, for "the generation of one thing is the corruption of another."<sup>33</sup>

If with Aristotle one holds (i) that prime matter is a completely passive potency without any actuality of its own whatever; (ii) that privation is the disappearance of the previous form, and, consequently, has no part at all in the composition of the substance; and (iii) that substantial form is absolutely the *first* determining principle, which makes the thing to be what it is, the only root of actuality, unity and perfection of the thing; then, consistent with his stated principles, the conclusion forced upon us is that in one and the same individual there can be but one single substantial form: other forms, that come after the first, are simply accidental and not substantial forms. Since the thing is already constituted in its own being, they cannot give substantial being, but exclusively accidental or qualified being; they do not confer upon the concrete thing its own definite and special kind of being, e.g., man, but only a qualified or relative state of being, for example, of being fair or dark, big or small, and the like.<sup>34</sup>

If the embryo is already constituted as nutritive life, how can it *become* another kind of life, when the nutritive form is corrupted with the coming of the sensitive form?

Moreover, when the new form comes, what relation does it have to the embryo as formed by the previous form?

Aristotle and Thomas write of the rational soul as *virtually* including both the plant and the animal soul, but common to their metaphysics is the certainty that no two souls can ever exist as the form of a body at the same time, lest the body's unity be lost: one form is always supplanted by rather than complemented by a subsequent form.<sup>35</sup> There is a language of substitution rather than addition. Yet it is still true that man is not only man but also an animal; he has an animal nature, too. Moreover, as he is alive, his soul also has the same powers that the soul of a plant must have for growth and nourishment. Had Thomas been a Franciscan and held to a theory of plural substantial forms, he might have dealt with the material constraints of the embryo together with the

<sup>33</sup> *Summa. contra Gentiles*, II.89.11.

<sup>34</sup> Callus, *Unity of Form*, 258.

<sup>35</sup> See, for example: Aristotle *On the Soul* II.3 and Thomas *Summa Theologica* Ia.76. 3.

fact of its development by describing it in any number of ways. For example, he might describe the embryo as brought into act by first a vegetal, then also a sensitive, then finally a rational soul as well, with no need to describe the embryo's form as in any way "corrupted" at the coming of each higher form. The plant-like embryo, as a composite, could form the material subsequently enformed by the coming animal-like soul, etc. Such an embryo would exist as a sort of ontological version of an onion; given the right knife, you could cut down the middle and see the layers of accumulated souls or forms.

Divorced from Aristotle's characterization of the embryo's development, Thomas might even have described it as first having a human soul (from the father's semen, perhaps), and then also a form of nutritive life, and then sensitive life. The possibilities are simply endless. Certainly, if he had done so, if he were not thoroughly convinced that a single subsistent form must confer being and unity, the embryo's development would have been no challenge to him. There is no question of continuity where there are continually present constituting forms. Indeed, if anything, the opposite difficulty arises: it becomes difficult to distinguish between the life of the parent and the life of the offspring when one considers the Franciscan approach to substantial form. The very fact that Thomas does treat extensively of the embryo, difficult as it is to explain in such a framework, reveals how dedicated he is to the unicity of substantial forms, and we should read his embryology in light of that concern. We may also note, however, that his description of a succession of souls is itself evidence that Thomas thinks of the embryo as one being. If it were three entirely separate beings, it would not be a metaphysical difficulty for him to solve. What could be easier, than to say that at one point in time there exists a plant, at



another an animal, and then at another, a human? Instead, he writes about the embryo as the thing that is each of these at different times.

One can easily understand the impetus for interpreting Thomas's embryology as an argument for delayed hominization, even if, historically speaking such was not his immediate concern. However, if we, as so many urge us, are to understand Thomas as holding that the embryo is not yet human at early stages of development, we are left with an important question: what, then, *is* the early embryo for Thomas, if it is not a human being? Thomas is nothing if not a completionist and a systematician. If there is one thing he is sure of beyond God's goodness it is the order revealed in the natural world. It would not be like him, and it is not worthy of him, to pass over the further questions raised by a potential solution to a problem. Yet strange to say, it seems that no one has seriously wrestled with alternative identities and their implications. After an examination of other approaches regarding the identity of the embryo, I will consider all of the logical possibilities, as Thomas might arrange them, and situate them within the broader context of his philosophy. It may be that another encounter with Thomas will reveal the inadequacy of the prevailing assumption regarding the presence of the rational soul and the humanity of the embryo, for "when you have eliminated the impossible, whatever remains, *however improbable*, must be the truth."<sup>36</sup>

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<sup>36</sup> A favorite pronouncement of fictional detective, Sherlock Holmes, created by Sir Arthur Conan Doyle. See for instance, *The Sign of the Four*, *The Adventure of the Beryl Coronet*, *The Adventure of the Bruce-Partington Plans*, *The Adventure of the Blanched Soldier*. Emphasis added.

“...the real reason why immediate animation took over with Renaissance Scholasticism is this decadent philosophy’s contamination with Cartesian elements.”  
- Joseph Donceel<sup>1</sup>

“Can it be said that what is generated by the copulation of two animals is a plant?”  
-John Noonan<sup>2</sup>

## Chapter 2: Silly Science and Faulty Philosophy

### Roots of Modern Delayed Animation Position

In 1922, the English translation of Canon Henri de Dorlodot’s work, *Darwinism and Catholic Thought*, was published. This book, and the original work published the preceding year, is perhaps the first widely disseminated modern iteration of the view that mediate animation rather than immediate animation is the true view of the Church and of Thomas Aquinas. In it, de Dorlodot argues that the idea of immediate animation is of relatively recent vintage, originating with the overly imaginative depictions of the embryo in scientific literature of the seventeenth century, and further entrenched in modern thought by the prevalence of Cartesian views on the relation of body and soul. He is quite fierce in his denouncement of immediate animation and its influence both within the Church and in society at large:

We are not exaggerating in the least when we regard the fact that this theory should still find defenders long after the experimental bases on which it was thought to be founded have been shown definitely to be false, as one of the most shameful things in the history of thought.<sup>3</sup>

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<sup>1</sup> Joseph Donceel, “Immediate Animation and Delayed Hominization,” *Theological Studies* 31 (1970), 104.

<sup>2</sup> John T. Noonan, “An Almost Absolute Value in History” in *The Morality of Abortion: Legal and Historical Perspectives*, edited by John T. Noonan, (Harvard University Press: Cambridge, MA; 1970), 5, footnote 8.

<sup>3</sup> de Dorlodot, *Darwinism and Catholic Thought*, trans Ernest Charles Messenger (New York: Benziger Brothers, 1922), 107, footnote 1.

The Canon died in 1929; a number of his manuscripts and letters are published posthumously in the book of his friend and translator, Ernest Charles Messenger, *Theology and Evolution*.<sup>4</sup> Some have remarked on the coincidence that it was de Dorlodot and Messenger, two priests at the University of Louvain, who undertake dismantling immediate animation, as it was another priest of the Louvain, a Thomas Fienus, who in 1620 published a work that with its very title asserted that the embryo received the rational soul on the third day.<sup>5</sup> However that may be, the two are almost exclusively responsible for the reemergence of the theory of delayed animation, and for reigniting an interest in Thomas' embryology. A number of the most important arguments for delayed animation are first, and perhaps best, delineated by them.

### **Silly Science: The Embryo as Homunculus**

De Dorlodot describes Thomas as holding an *epigenetic* view of the embryo, as opposed to the *preformationist* view so popular in the seventeenth and eighteenth centuries. *Epigenesis* is the theory that the embryo gradually develops organs and characteristically human physical attributes over time. *Pre-formation* is the converse; it is the idea that the embryo comes into being already formed with regard to its distinct parts.

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<sup>4</sup> Ernest C. Messenger, *Theology And Evolution: A Sequel To: Evolution And Theology* (Westminster, MD: Newman Press, 1949).

<sup>5</sup> Cf. Daniel A. Dombrowski and Robert Deltete, *A Brief, Liberal, Catholic Defense Of Abortion* (Urbana : University Of Illinois Press, 2000), 43. Thomas Fienus (also written Feyens), *De formatione foetus liber, in quo ostenditur animam rationalem infundi tertia die* ("On the formation of the fetus, in which it is shown that it is infused by the rational soul on the third day"). The implication is of course that Fienus was motivated by advances in scientific technology in the form of magnifying lenses which led to the "discovery" that the embryo was really just a tiny man, a *homunculus*. For an alternate interpretation of Fienus' work as an internal critique within the Aristotelian tradition, see Jones, *The Soul of the Embryo*, 162-64, 169; and Joseph Needham, *A History of Embryology* (Cambridge: Cambridge University Press, 1959), 120.

The first is a matter of embryonic development, the second of mere growth. Joseph Needham, in his excellent *A History of Embryology*, describes the difference this way:

Embryogeny, preformationists held, is not comparable to the building of an artificial machine, in which one part is made after another part, and all the parts gradually “assembled,” but takes place rather by an unfolding of what was already there, like a Japanese paper flower in water.<sup>6</sup>

Aristotle and Thomas understood the embryo in epigenetic terms in that they describe a simple, relatively undifferentiated beginning (i.e. “the life of a plant”), and a number of stages in which the embryo is further differentiated with regard to organs and powers of animation. By the early 1700’s, the theory of preformation was well entrenched.

Elaborating upon the assumptions of Malpighi, Swammerdam and others, who expected that if only their rudimentary microscopes were more powerful they would be able to see not just the beginnings of heterogenous parts but the minute details of fully realized and perfectly functioning organs, prominent figures such as Leeuwenhoek and Hartsoeker circulated imaginative illustrations showing human spermatozoa as housing tiny, perfectly formed adults. While theirs was speculation, a number of men claimed to have actually seen such figures in spermatozoa.<sup>7</sup> Competing with these illustrations of spermatozoa were depictions of equally perfect *homunculi* (literally, *little men*) as tiny embryos already existing within human ova. Any number of wild theories followed, some postulating the pre-existence of all souls within Adam’s seed or Eve’s womb, a generation within a generation within a generation, etc. *ad infinitum*. We may find the idea of a homunculus ridiculous now, but de Dorlodot makes an important and in his

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<sup>6</sup> (New York: Arno Press, 1975), 168. Note that the particular interpretation of epigenesis as mechanistic regards rather the mechanist tendency in biology of the time rather than Aristotle’s view specifically, and reveals the opinion of those holding preformation views and not Needham’s own opinion.

<sup>7</sup> Needham identifies Andry, Dalenpatius, and Gautier, p. 205. I am indebted to Needham for his entire discussion of seventeenth and eighteenth century preformationist embryology (*A History of Embryology*, 163-170, 205-223).

view decisive point about immediate animation: he believes we can only attribute humanity to the embryo if we are imagining it as a homunculus: as a fully formed human being, only lacking in size rather than development. It was easy for theologians and then lay persons to attribute a rational soul to something that under a microscope would *look* like a person.<sup>8</sup> Indeed, it was impossible to think of such perfection as lacking the human soul. It is from this way of picturing the early embryo, de Dorlodot, Messenger, and others think, that all immediate animation perspectives and arguments spring. It all began with a picture, a new and riveting way of imagining our beginnings. At that point, “[s]ome within the church began to reason as follows: *if* the embryo has a human form from the moment of conception, then on good Augustinian or Thomistic grounds it can have a human soul from the moment of conception as well. Hence, it is morally wrong to kill the homunculus.”<sup>9</sup>

### **Thomas Aquinas as the Model for Delayed Animation**

It is against this backdrop that Messenger sets his presentation of Thomas’ embryology. Thomas “insists that the embryo is already a distinct individual, and that therefore its vegetative life must be due to a principle of its own.”<sup>10</sup> However, unlike his teacher, Albertus Magnus, he describes the soul of the embryo as first only nutritive. For Messenger this is because Thomas “insists throughout that a soul is the form of a body,

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<sup>8</sup> *Theology and Evolution*, 241-42.

<sup>9</sup> Dombrowski and Deltete, *Defense of Abortion*, 36. Though they, along with Messenger and de Dorlodot, are aware of individuals who held an immediate animation position previous to the seventeenth century, these are generally treated as meaningless exceptions, and the force of attending arguments attributed, again, to primitive and overly imaginative assumptions about physical reality (what I have called ‘silly science’) or to views on the body and the soul which the two find problematic on philosophical or theological grounds (‘faulty philosophy’). For Messenger’s treatment of this subject, see *Theology and Evolution*, 233-236; for de Dorlodot’s, see pages 266-71.

<sup>10</sup> *Theology and Evolution*, 253.

and *its nature must depend upon the particular state of the body.*”<sup>11</sup> That is, because the embryo at its very earliest stages manifests a very rudimentary organization, one hardly suited to intellectual or even sensitive life, it has instead the kind of life it *is* suited to, the life of a plant. The embryo then undergoes a number of changes and stages of development, all attributed to the seminal power from the father, until it is appropriately organized. It is because of the role of the seminal power that Messenger thinks parents have a direct and important role in the generation of a new human being, for in his understanding of Thomas’ embryology, the formative power in the semen is responsible for continually developing the embryo to the point at which it “requires and calls for the advent of the rational soul.”<sup>12</sup>

Messenger does a rather strange thing at this juncture, however, with regard to gametes. Explicitly distancing himself from Thomas’ views on the matter, he claims that gametes in fact possess plant souls.<sup>13</sup> Not merely that they exhibit nutritive powers (for after all, the higher orders of souls contain all the powers of lower orders of souls; it is not only plants which grow) but rather that, since gametes are alive but do not in themselves exhibit any powers unique to rational souls, they must therefore possess the life of a plant.

Granted that the sexual elements are endowed with life of what character or grade is that life?...I think that the most likely answer is that, at any rate they are not endowed with *human* life. For obviously the male and female gametes could hardly have each a human soul of their own before their union. Can they be said to be human, inasmuch as they really belong to and form part of the body of the parent, living with his or her life, and therefore to that extent, i.e., as part of the parent’s organism, living with his or her human soul? That is not altogether

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<sup>11</sup> *Ibid.*, 253, emphasis mine.

<sup>12</sup> *Ibid.*, 254.

<sup>13</sup> “[O]bservations have now made it abundantly clear that both the spermatozoon and the ovum are living cells, for they display characteristic functions of life. So this constitutes the first important difference between St. Thomas’s [sic] conception of embryological development and our own,” *Ibid.*, 255-56.

unthinkable, but it seems unlikely. And at any rate, it would seem that, whatever these sexual gametes may be before the act of generation, in the process of generation there is a period even before their union, in which they exist with a life of their own...of what kind is that life? We have adequate reasons for saying that that life is not specifically human at that time. For, apart from the fact that that would make generation nonsensical, inasmuch as it would mean that, instead of a new human being coming into existence, we should have two human beings reduced instead to one—apart from that, we have very good reason for saying that the life of the sexual gamete is *not human*, inasmuch as *no specifically human activity is manifested by it*...[i]ndeed, it seems clear that it is *purely vegetative*.<sup>14</sup>

It is as if he imagines gametes as a generic species of plant residing inside a human body; these then somehow engender a new life having a similar, generic plant soul: the newly conceived embryo. It is difficult to understand why he posits another soul for each gamete, and does not understand them as Aristotle and Thomas do, as participating in and being formed by the life of the parent's body.<sup>15</sup> After all, many parts of the human body are devoted to purposes that can only be called plant-like. What have the cells of the stomach lining to do with intelligence? Yet there is no difficulty understanding them as vivified by the rational soul. There is no need to invent a special kind of life for eggs and sperm, unless as a way to address or anticipate a problem regarding their possession of some power of soul or of a soul itself whereby they generate a new life.<sup>16</sup> Bequeathing a generic plant soul upon gametes so that they might generate a generic plant-being like themselves introduces a new and daunting set of problems, one of which is the ridiculous result that we each house hosts of plants in our reproductive tracts, and it is they—and not we—which reproduce themselves, in such fashion that little plant lives come into being within us, and inexplicably, at several removes, eventually become human and

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<sup>14</sup> *Ibid.*, 256. Emphasis original.

<sup>15</sup> See, for example, Aristotle's *Generation of Animals* II. Though semen and menstrual blood are not organs, they are a concoction of nourishment; a sort of especially rarified building block material. One is reminded, at this remove, of stem cells.

<sup>16</sup> As we will see later, this points to a difficulty in the continuation of species and in the meaning of nature. I believe that this is precisely why Messenger ascribes a nutritive soul to the sperm and egg: so that it might be clearer how they are able to engender an embryo also animated by a nutritive soul.

finally somehow our own progeny.<sup>17</sup> It is his eagerness to locate in embryogenesis an echo of evolution, his own “ontogeny recapitulates phylogeny,” which leads him to stress this point.<sup>18</sup> At the close of his ‘modern’ and ‘scientific’ account of embryogenesis, he likens early details in the formation of the embryo to the anatomy of *fishes*, drawing attention to its tail, to gill clefts, and to its two-chambered heart and the arrangement of its bowels as similar to fishes. By contrast, at two months, the embryo begins to look like a baby *mammal*.<sup>19</sup>

In de Dorlodot’s essay, *A Vindication of the Mediate Animation Theory*, the good Canon gives a parallel account of a Thomist mediate animation perspective:

Every soul or life-principle is the substantial form of a living organism of some particular species. An organism is a heterogeneous body of which the vital, as well as the other properties, are spread over among the various parts of the body, or adopting the usual expression, among the different organs. Hence a body cannot be informed, that is, animated, by a life-principle of a particular species, if it does not possess the organization characteristic of the species in question, and in particular, if it has not the organs essential for the species.<sup>20</sup>

So far, Messenger has been in agreement. They diverge somewhat, however, when describing in what way we are to understand the nutritive and sensitive souls of the embryo. De Dorlodot groups the gametes and embryos in question into the general category appropriate to the progenitor and to the adult specimen which they may become:

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<sup>17</sup> Messenger provides a striking parallel and anticipation here of Richard Dawkins’ perspective on humans as “survival machines” for DNA replication. Chapter 10: “Selfish Genes and Selfish Memes” in *The Selfish Gene*, (Oxford: Oxford University Press, 1976).

<sup>18</sup> I refer to Ernst Haeckel’s “law of recapitulation.” Evolution is, after all, the theme of the work as a whole. The majority of the work is devoted to addressing criticisms of his earlier book on the evolution of species, *Evolution and Theology*. Part Two deals with what he views as the *evolution* of the embryo. In de Dorlodot’s earlier work, he introduces delayed animation as an example of evolution of species, in that the embryo is first a plant, then an animal, and then a man. To further complete the analogy, he speaks of the embryo as undergoing a multitude of changes along the way rather than the handful identified outright in Thomas’ account. *Darwinism*, 107-10.

<sup>19</sup> *Theology and Evolution*, 228.

<sup>20</sup> de Dorlodot, *A Vindication of the Mediate Animation Theory*, in Messenger’s *Theology and Evolution*, 261.



[t]he ovum and the embryo exercise the faculties proper to the *ovum* or the *embryo* of the *zoological species to which they belong*. But these faculties are not the vegetative faculties of the *adult animal*. They are ‘proper to the species’ if we extend the term ‘species’ to include the whole cycle of ontogenetic evolution.<sup>21</sup>

That is, the embryonic (vegetal and sensitive) forms belong to the species of the mature organism and exhibit the appropriate level of development for embryos of that species. However, that does not mean that he believes that an embryo is easily equated with the adult. For de Dorledot, the dog embryo belongs to the species ‘dog’ in the same way that the carcass of a dog does, and it is similarly impossible for carcass or embryo to be informed by the rational soul.<sup>22</sup> However, we may note that this view is susceptible to a simple analysis of the way in which the corpse and the embryo are related to the species: the dog embryo is what *will be* formed by the dog soul, the dog corpse is what *used to be* the matter formed by the dog soul. The first is potentially ensouled; the latter may only be potentially ensouled if it first decays to the point of becoming earth, and only then is it potentially semen, which is potentially an embryo, which is potentially a dog.<sup>23</sup>

### **Faulty Philosophy: Man as Two Substances v. Man as a Hylomorphic Unity**

It is interesting to note that for Messenger, the ability to distinguish between a human embryo and all other embryos at any stage is not sufficient to identify it as *human*. It would still not be distinguished by “any characteristic which makes it specifically human here and now” and therefore “we have no right to say that it is endowed with human life here and now, for such life is not manifested, and indeed, the organism is such

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<sup>21</sup> *Ibid.*, 263.

<sup>22</sup> *Ibid.*

<sup>23</sup> Cf. “We must not understand by that which is potentially capable of living what has lost the soul it had, but only what still retains it; but seeds and fruits are bodies which are potentially of that sort.” Aristotle, *On the Soul* II.1.412b25.

as to be incapable of specifically human life.”<sup>24</sup> In his estimation, the only way immediate animation would be possible is if the soul were not the form of the body. If the soul were only living inside the body, guiding it as a vessel, he imagines that God could certainly create a rational soul and infuse it in the newly minted embryo, however small and undifferentiated, and that such a soul would have no difficulty directing the growth of the embryonic body from within. But he will not make such a concession; for Messenger—as for Thomas—soul as form, human as hylomorphic unity, is paramount.<sup>25</sup> Thomas is quite clear that the soul does not exist within the body as its motor.<sup>26</sup>

This leads us to de Dorlodot’s second claim: that the theory of immediate animation depends upon and can only exist within a Cartesian view of the human being, and cannot be maintained with Thomas’ hylomorphic perspective. Messenger describes it this way: “for Descartes, the essence of matter is extension, and the essence of mind is thought, and there seems to be only a more or less accidental union between the two in man.”<sup>27</sup> In fact, he treats body and soul as two distinct substances. Hylomorphism, by contrast, is the idea that natural bodies are composed of matter and form, that the form *activates* the matter, making it to exist, to have unity, and to exist as some thing or other in particular. Matter and form, as they exist in the individual, are one substance, not two. Matter in itself is undifferentiated and in potency to form. With regard to human beings, Thomas argues that it is always the human who exists as such and who performs physical or intellectual acts, and not merely her body or her soul. “*Anima mea non est ego*,” he

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<sup>24</sup> *Theology and Evolution*, 258.

<sup>25</sup> *Ibid.*

<sup>26</sup> *Summa Theologica* Ia.76.1.

<sup>27</sup> *Theology and Evolution*, 237.

tells us, “*I am not my soul.*”<sup>28</sup> Neither are we merely our bodies. We are body and soul together. Messenger writes that “[s]oul and body, as form and matter, coalesce necessarily into one being, and correspond entirely to each other. The body is necessarily of the nature which the soul requires, and the soul is necessarily of the nature called for by the state of organization of the body. That is the Aristotelian and Scholastic view.”<sup>29</sup> As hylomorph, one is literally a “matter-form” unity.<sup>30</sup> For that reason, Messenger believes it imperative to stress that the body of a human being be appropriately human; that is, appropriately developed and supplied with the organs necessary for its proper functioning.

One might raise the possibility of a rational soul actuating the embryonic body while it develops it into a properly human body with the requisite level of sophistication. Messenger is certain that this is impossible if one really views the human being as a unity of matter and form, for how can such a noble form animate a simple, undifferentiated being when there is such a serious disproportion between them? To hold such a belief about the embryo is, for Messenger, to confuse the roles of formal and efficient cause, and treat the soul as the thing which constructs the body rather than what makes the body to exist as such.

Faced with the difficulty as to how a specifically human soul can act as the “form” of a body which is as yet incapable of specifically human life, the adherents of this *Immediate Animation theory* take refuge in the suggestion that the human soul presides over the actual formation and the development of the embryo and foetus from the very beginning...they fall into a serious philosophical error here, in thinking that a *formal* cause can at the same time be an *efficient* cause of its own being, or at least of an essential part of it.<sup>31</sup>

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<sup>28</sup> *Super primam epistolam ad corinthios*, 15-2, 1 Cor 15:12-19.

<sup>29</sup> *Theology and Evolution*, 258.

<sup>30</sup> From the Greek: matter (*hylē*) and form (*morphē*).

<sup>31</sup> *Theology and Evolution*. 232. Cf. *Ibid.*, 332.

Others are later to expand upon this insight and further explain the seriousness of this claim.

## **Recapitulation and Further Developments of the Modern Delayed Animation**

### **Position**

Joseph Donceel, in a shorter piece published in 1967 and then again more fully in 1970, takes up where de Dorlodot and Messenger left off.<sup>32</sup> He also makes the case that mediate animation is the true view of Thomas Aquinas and that the popularity and force of the immediate animation position may be traced to philosophers and theologians entranced by illustrations of the embryos as a *homunculus*, which *looked* so like a little person in shape and with regard to limbs and proportion, that they quickly ascribed to it the soul that seemed appropriate to such perfection. It is Donceel who sets the tone and defines the terms of the discussion for this generation of modern scholars interested in the topic, and even anticipates in strikingly prescient ways the fault lines of the debate, which would eventually reveal themselves in concerns about embryonic twinning, totipotency, and the like, topics which will be treated in detail in the next chapter.

In an important move, he draws more attention to the distinction between mere animation and animation with a rational soul, explicitly arguing that the question is not when the embryo is animated in the sense of being alive, but when the embryo becomes truly human, a question of its *hominization*.

Some people reject [delayed animation] because science teaches that the embryo is alive from the very beginning. St. Thomas did not deny this. He claimed that during the first

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<sup>32</sup> Joseph Donceel, "Abortion: Mediate v. Immediate Animation," *Continuum* 5 (1967); and "Immediate Animation and Delayed Hominization," *Theological Studies* 31 (1970). For a critique of both articles by Donceel, see Stephen J. Heaney, "Aquinas and the Presence of the Human Rational Soul in the Early Embryo," *The Thomist* 56 (1992).

stages of its development the embryo possesses a vegetative or plant soul, next it has a sentient or animal soul; finally, when it is sufficiently organized, God infuses into it a spiritual soul. Then and only then may we speak of a human being. In other words, centuries before the word itself was coined, St. Thomas professed some kind of "evolution" not for the race but for the individual.<sup>33</sup>

It is clear to Donceel that from a biological perspective the fertilized egg possesses a life of its own and shows human characteristics. He compares this fertilized egg to a human heart or other organ prepared for transplant: it is alive, it is human, but it is not a human person: "it possesses only vegetative human life; the higher levels of human life are missing, and that is why it possesses no rational, human soul."<sup>34</sup> Speaking of in vitro fertilization experiments and the resulting, days-old fertilized eggs, he finds it "hard to admit that these microscopic organisms are human beings" and "would rather call them vegetative organisms which, if supplied with their proper, unbelievably complex environment, might evolve into human beings."<sup>35</sup>

Donceel is similarly sure that for Thomas neither the egg nor the early embryo is a human being, not until the seventh week of development.<sup>36</sup> As Donceel puts it, though Thomas

had not the slightest idea of genetics, of chromosomes and genes, he held that the embryo was, from the very beginning, a human body in potency, a virtual human body. But unlike many Catholic thinkers of today he did not admit that an *actual* human soul could be coupled with a *virtual* human body. This would have gone against the hylomorphic conception of man which he firmly professed. That is why he taught what is known as the theory of mediate animation.<sup>37</sup>

If his readers wondered why they ought to pay attention to the metaphysical insights of someone with such antiquated biological views, Donceel insists that the two

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<sup>33</sup> Donceel. *Abortion*, 170.

<sup>34</sup> *Immediate Animation*, 96. Donceel cites on the next page some arguments against his identifying a removed human heart with an early embryo, which I find even more convincing than he does.

<sup>35</sup> Donceel. *Abortion*, 171.

<sup>36</sup> *Ibid.*, 167-68.

<sup>37</sup> *Ibid.*, 168.

are separate for Thomas and moreover, that Thomas' philosophy does not depend upon the accuracy of his scientific knowledge and so is not invalidated by its inaccuracies.

To my mind, these statements of St. Thomas contain a mixture of erroneous biological information and sound philosophy. If this philosophy were derived from the biology, we would have to drop it. Likewise, if Thomas had researched his conclusions only by subsuming his scientific mistakes under his sound philosophical principles, we would have to question them. But it is my contention that these conclusions have been reached, or could have been reached, on the basis of sound philosophical principles and of the common-sense knowledge which was available to Thomas and his contemporaries.<sup>38</sup>

In this interpretation he differs from de Dorlodot and Messenger, who while making exceptions for Thomas' views on the maternal contribution and their own views on the gametes as ensouled, generally find his biology competent and even insightful.<sup>39</sup>

Donceel follows the two pioneers in identifying immediate animation (or as he prefers, immediate *hominization*) as a threat to man's hylomorphism, his essential unity of body and soul. "Hylomorphism cannot admit that the fertilized ovum, the morula, the blastula, the early embryo, is animated by an intellectual, human soul" because "[s]oul and matter are strictly complementary; as the soul stands higher in the hierarchy of beings, the matter which receives it, which is determined by it, must be more highly organized."<sup>40</sup> In fact, he goes a little farther than his predecessors, arguing that because of the way souls and bodies form one substance, "[e]ven God cannot put a human soul into a rock, a plant, or a lower animal, any more than He can make the contour of a circle

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<sup>38</sup> Donceel, *Immediate Animation*, 79.

<sup>39</sup> *Theology and Evolution*, 255-57. "Essentially then, and fundamentally, the facts are as St. Thomas stated them." (257) They also insist that historically speaking, mediate animation and not immediate animation has enjoyed the support of scientific observation: "the *Mediate Animation theory*...alone had the support of such observation as was then possible. Those who held the *Immediate Animation theory* were led to do so, not because of any supposed experimental or observational basis, but on theoretical grounds arising either out of the acceptance of the Platonist view of the relations between soul and body or else out of the Traducianist position" (236).

<sup>40</sup> Donceel, *Immediate Animation*, 82.

square.”<sup>41</sup> That is, it is impossible (to the point of being beyond the scope of miracles) to unify a body and a soul manifestly disproportioned to each other. It is simply against the nature of both soul and body. He places great emphasis on the need for the embryonic body or indeed any body to be sufficiently organized; this is, after all, what bodies *are*. “Thomas, after Aristotle, defined the soul as the first act of [a] physical, *organized* body, which possesses life in potency. To each specific degree of organization there corresponds a soul.”<sup>42</sup>

Donceel, too, is convinced that it is because Scholastic thinkers are infected with Cartesian dualism that they do not re-establish the theory of delayed animation once preformation was disproved and epigenesis became the norm. If the human soul and the human body are both substances, and the one is no longer understood as the formal cause of the other, then the relationship between soul and body can easily be understood as builder to building: the soul is the *efficient* cause of the embryonic body. We remember that for Donceel and for others, immediate animation assumes that soul and body are relatively independent, that they do not “need” each other to exist or to exist as human. The evidence for this is the idea that the rational soul does not require a body equipped with the organs necessary for rational activity. This is to treat soul and body as two substances rather than one. If the rational soul is no longer the form of the body, but instead the body already exists and exists as human regardless of its ability or inability to manifest the functions appropriate to the rational soul, then they do not exist as materialized form and enformed matter together (a hylomorphic unity). They may,

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<sup>41</sup> *Ibid.*, 82.

<sup>42</sup> *Ibid.*, emphasis his.

however, exist as builder and built, in a relationship of efficient causality rather than formal causality.<sup>43</sup>

In this view, because the soul is merely inhabiting rather than causing the body to be as such, it is easy to imagine that the soul is not thereby troubled or forbidden entrance by the limited space, organization, or development of the earliest stages of embryogenesis. It moves in—to a fixer-upper or starter home, as it were—ready to remodel, update, expand, and otherwise shape its living space to suit. But this is not sufficient if we wish to speak of the embryo as already a human being within a Thomist framework. For the house is not a house until it has been built, and no appeal to the builder's activity or to his plan of building will make the house exist as a house while it exists as a worksite.<sup>44</sup>

If, by analogy, we are allowed to speak of the substantial form of a building, we would certainly not claim that the architect or the blueprint or both combined constitute the substantial form of the building. The formal cause can only exist in the finished building. The soul is not to the body as an architect or a blueprint is to a building, but rather as sphericity is to a ball. A deflated ball, although virtually spherical, does not possess the form of sphericity. Neither can a fertilized ovum or a morula or an early embryo be said to possess the substantial form of man.<sup>45</sup>

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<sup>43</sup> This, also, is disallowed by Thomas, as he distinguishes between the intrinsic movement of nature and the extrinsic movement of man's agency. The human being is not an artifact to be constructed, and neither is his body. But this point will be discussed in more detail at a later point.

<sup>44</sup> Here I believe Donceel does violence to the opposing position. He insists on viewing the early embryo as radically unformed which is untrue scientifically and likewise not reflected in Thomas' discussion of the embryo. For, though God may be able to make man out of "the slime of the earth" he has made a world in which man is naturally formed out of the mother's menstrual blood, which is a highly concocted residue of her body and well suited to providing the material of a human body. Cf. *Summa Theologica* Ia.91.1. Proponents of immediate animation tend to focus on the level of organization existing already within the fertilized egg. In this analogy then, they might tend to view the embryonic body as perhaps a tiny one-bedroom home which will be remodeled by its inhabitant over the course of time. To them, the embryo would already *be* a house, and not a worksite. Donceel, however, views the embryonic body as radically undifferentiated and in this analogy, as a nearly empty worksite. All analogies falter at some point, but this one proves deeply flawed in several respects, though Donceel's critique regarding a confusion of formal and efficient causes is not thereby invalidated.

<sup>45</sup> *Abortion*, 169.



A ghost in a machine may be its architect; but to ascribe to the embryo's soul the making of the embryo's body is to already understand them as two substances rather than one.

The unity of man as body and soul is lost. "In fact, in this system the soul will be considered as actively molding and organizing the body. It is no longer the 'shape in the statue' but the sculptor of the statue."<sup>46</sup> Donceel takes a familiar illustration, so often used by Aristotle and Thomas to explain the relationship of matter and form as always realized *together*, and alters it to help his readers understand his point: this view of the rational soul as constructing the human body locates them *next to* each other rather than *within*, making of them two things rather than one.

This claim also stands as a critique to those who would say that the spiritual soul was present virtually at earlier stages, developing a point made by Messenger, who reminds readers that generation "is not a faculty by which one thing perfects itself, but rather a faculty by which one thing generates another, similar in species to itself."<sup>47</sup> This is why he believes that the vegetative soul cannot generate the sensitive soul, and why he interprets Thomas as holding that the development of the embryo to the point at which it is well-disposed to the successive form must be attributed to the seminal power and not to the embryo itself.<sup>48</sup>

For Donceel, to situate the rational soul within the embryo from the beginning, even virtually, is to confuse the soul with the efficient cause and task it with making the body. What, then, directs the development of the embryo through successive stages? He enumerates the alternatives for us: if the embryonic soul does not make its body, and if

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<sup>46</sup> Donceel, *Immediate Animation*, 94.

<sup>47</sup> *Theology and Evolution*, 232, 254.

<sup>48</sup> I resolve the ambivalence in passages relating to the scope of the seminal power quite differently than Messenger does. This subject will be examined in more detail in Chapter 7.

we reject Thomas' idea that there is some formative power in the father's semen, he proposes that we treat the development of the embryo as an extension of God's creative power seen at work in evolution, and explicitly likens the development of species to the development of the embryo.<sup>49</sup> While he admits this may cause further problems with regard to the continuity in generation between parent and child, in light of recent advances in technologically assisted or laboratory-based reproduction, he thinks that such a concern is not particularly problematic:

Thus embryogeny is explained on the phenomenal level by the countless physicochemical and biological factors, whose activity is investigated with increasing success by the science of embryology; it is explained on the ontological level by the creative power of God, who continues to expand the creation which He started 'in the beginning.' This explanation may somewhat downgrade the parents' contribution in the begetting of their child. Is this a real difficulty when we consider that the possibility of causing this process to occur in vitro is no longer purely theoretical?<sup>50</sup>

### **Anticipation of Later Arguments**

Donceel not only solidifies and further develops points first made by de Dorlodot and Messenger, but also puts forward a number of other, quite powerful arguments for delayed animation, which will be considered in more detail in the next chapter. For instance, he counters what will later be articulated as the *argument from potentiality* with the following: if we were to identify, as he puts it, "the power of developing into a human person" as, alongside of possession of human genetic material, *what makes us to be human*, we would have to extend personhood to each individual cell of the zygote as

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<sup>49</sup> Donceel, *Immediate Animation*, 85

<sup>50</sup> *Ibid.*

individuals, because they possess *totipotency*.<sup>51</sup> That is, such cells have the power, and may in fact go on, to develop into a human person. He also cites as problematic the phenomenon of monozygotic twinning, in which a single fertilized egg cell divides, developing into two or more embryos. The problem with twinning seems obvious: “[a] human person does not split into two or more human persons.”<sup>52</sup> To be consistent regarding treating the power of becoming human as the measure of personhood, he argues that we would have to treat unfertilized eggs as human persons, because experiments on certain animal eggs have yielded female progeny, and it may some day be possible to duplicate this in human eggs.<sup>53</sup> He is of course anticipating cloning, stem cells, and other more recent advances that were not current when the original article was published. We would do well to remember this article was published in 1970; more recent advancements in reproductive technology might both confirm and astound him.

Donceel also alludes to what has been called fetal “wastage”—adverting to the fact that a large percentage of fertilized ova do not survive to become embryos—as further demonstration that it makes no sense to think of such lives as human persons.<sup>54</sup> These fertilized eggs often do not live long enough even to be implanted. His manner of description is telling, however. To him, “they are shed with other waste products,” as if the context and manner of the disposal of a body could in any way determine the life or worth such a body may have had prior to death.<sup>55</sup> The fact that these deceased early

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<sup>51</sup> *Ibid.*, 99. For a dissenting opinion regarding the extent to which the scientific literature demonstrates that embryonic cells can be totipotent see Rose Koch-Hershenov, “Totipotency, Twinning, and Ensoulment at Fertilization,” *Journal of Medicine and Philosophy*, 31 (2006), 139-164.

<sup>52</sup> Donceel, *Immediate Animation*, 98.

<sup>53</sup> *Ibid.*, 97-98

<sup>54</sup> Up to 50% of conceptions end in spontaneous abortion, commonly known as miscarriages, which is especially common in the early weeks of pregnancy. *Langman's Medical Embryology*, 12<sup>th</sup> ed., edited by T. W. Sadler (Baltimore, MD: Lippincott Williams & Wilkins, 2012), 13.

<sup>55</sup> Donceel, *Immediate Animation*, 99.

embryos leave the body with menstrual blood, which he considers “waste product,” seems to him indicative of the natural value of these embryos, but it may instead indicate to readers a troubling ignorance of and disdain for the female body.<sup>56</sup>

Donceel considers another possible objection to delayed animation, one that has since received quite a lot of attention: the lack of easily identifiable stops and starts in the process of embryonic growth to either match Thomas’ descriptions of different souls or to identify a later point at which the embryo becomes human. This is the perception that “[d]evelopment is continuous. Hominization is a very gradual process, which goes on from the moment of conception to the hour of our death,” which he concedes has “some truth” to it.<sup>57</sup> However, he argues that there are still marked shifts, certain thresholds that are crossed. Though we may not be able to say with certainty when something may have been, for the first time, we can identify with certainty times which are too early for those later realities to have begun to be true. That is, he thinks we may never be able to pinpoint when precisely the embryo becomes human, but that it is possible to identify times at which we may be certain the embryo cannot possibly yet be human. His standard, the bare minimum which the embryo must possess before the earliest possible onset of human personhood, is the rudimentary organs of human sensing and processing: the cerebral cortex in particular. For Thomas, human “higher, spiritual faculties have no organs of their own, since they are immaterial, intrinsically independent of matter,” but those faculties also depend upon “the cooperation of the highest sense powers, imagination, memory, what the Scholastics called the ‘cogitative power.’ Its activity

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<sup>56</sup> Donceel’s description suggests that, at the close of the menstrual cycle, the vagina exudes something in some way akin to excrement. For someone who finds fault with Thomas for overlooking the female contribution to generation, this is inexcusable.

<sup>57</sup> Donceel, *Immediate Animation*, 100

presupposes that the brain be fully developed.”<sup>58</sup> He will not be alone in insisting on at least this stage of development before judging it possible that the embryo may be informed by the rational soul, though many others specify earlier stages.

In 2000, Dombrowski and Deltete published a book aptly titled *A Brief, Liberal Catholic Defense of Abortion* in which they attempt to enlighten a new generation with a familiar claim: far from supporting the modern Catholic stance that personhood begins immediately upon conception, the general position of the Church through history has been that the embryo does not become human until later on in its development.<sup>59</sup> They identify Thomas and others as clearly holding a delayed hominization view, taking as proof his Aristotelian delineation of a progression of souls in the embryo, and lament the ignorance of Catholics and others on that point. Echoing de Dorlodot’s ringing accusation some eighty years earlier, they write:

Despite the ready availability of the relevant texts, the fact that neither Augustine nor Thomas—two of the most important thinkers in the history of Catholicism—saw the fetus in the early stages of pregnancy as a human person is still one of the best kept secrets in the history of Catholicism, indeed, within the entire history of ideas.<sup>60</sup>

So far, their assertion follows closely upon familiar ground, with the addition of Augustine.<sup>61</sup> Their peculiar addition to the debate is their examination of the *reasons* abortion has been treated as anathema. In their analysis, opposition to abortion in Catholic circles has rested on two distinct grounds: what they have called the “ontological” position and the “perversity” position. The first, they think, is an illusion,

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<sup>58</sup> Donceel, *Immediate Animation*, 83.

<sup>59</sup> For an official statement of the modern position of the Catholic Church on abortion, see *Declaration on abortion: Sacred Congregation for the Doctrine of the Faith*. Nov. 18, 1974.

<sup>60</sup> Dombrowski and Deltete. *Defense of Abortion*. 3.

<sup>61</sup> For an alternate reading of Augustine’s views, cf. David Albert Jones, *The Soul of the Embryo*, 118-19; and “Thomas Aquinas, Augustine, and Aristotle on Delayed Animation,” *The Thomist* 76.1 (2012).

based upon the enduring impact on the imagination of the theory of preformation, and characteristically, that this view of the embryo stands in direct contradiction to the clear teaching of Thomas on the matter, for whom the early embryo is animated—and thus alive—but not yet human. Though they do note some important exceptions, in their judgment “delayed hominization in some form or other was the norm in the premodern period.”<sup>62</sup> The second position rests upon viewing contraception and abortion as a perversity of sexual relations, which are normatively aimed at procreation, and a matter quite outside the topic at hand.

As others before them have so well established, the crux of their position is a dependence upon the idea (which they locate in both Thomas and Augustine) that what it means to be human is “being alive in a sophisticated enough way that it qualifies as a human *person*, with sentiency a necessary condition for human personhood.” This definition of being human they distinguish sharply from something that is simply “alive with human genetic material or...[having] human parents.”<sup>63</sup> Others have made a similar distinction, arguing that personhood is not commensurate with humanity.<sup>64</sup>

Dombrowski and Deltete are careful to elucidate how, in their view, delayed hominization preserves the unique relationship the human soul has with the human body. To them, the only alternative to delayed hominization is a Cartesian duality whereby the soul resides in the body like a ghost in a machine. Hylomorphism, viewing the soul and body as a unit, is to them perhaps Thomas’ great triumph, and they are attentive to this claim throughout their critique of others’ views on the embryo. “It must be admitted that

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<sup>62</sup> *Defense of Abortion*, 3.

<sup>63</sup> *Ibid.*, 7. Emphasis in original.

<sup>64</sup> This position may be seen in perhaps its extreme and best known form in Peter Singer. Cf. his essay “Who is a Person?” in *Rethinking Life & Death: the Collapse of Our Traditional Ethics*, (New York: St. Martin’s, 1994).

hylomorphism is, in fact, compatible with immediate hominization, but *only if* belief in a homunculus or some other sort of preformationism is true.”<sup>65</sup>

### **A Critique of Delayed Animation, on Familiar Grounds**

It is perhaps fitting that the weaknesses that first emerge from this position, spelled out so clearly across eight decades, arise from the same two general trends that are repeatedly adverted to by these gentlemen: what I have called ‘silly science’ and ‘faulty philosophy’. They are right to poke fun at the whimsy of imagined miniscule persons who, like the children’s toy *Magic Grow*<sup>TM</sup> capsules just need to grow bigger.<sup>66</sup> However, I would like to point out ways in which describing the early embryo as a generic plant or animal leads to ‘science’ just as ridiculous. The assertion that immediate animation assumes a Cartesian view of the relation of body and soul deserves further critical attention, as does the related claim that all who view the embryo as already human are really reverting to imagining it as a *homunculus*.

If a reader were to take de Dorlodot’s description of early embryonic life quite seriously, she might be in sympathy with the response of St. Maximus the Confessor to the idea of plant or animal souls in the embryo, and laugh at the ludicrous idea that a man might be father to a plant.

Atque si solam illud nutriendi et augendi animam habere affirmatis, plantae alicujus profecto, non hominis, hac ratione secundum vos corpus illud quod nutritur et augetur erit. Et quomodo plantae pater homo sit intelligere, quoquo consideratione vertor, equidem non habeo, cum de homine plane existentiam secundum naturam non habeat. Si contra sensualem solam in embryo inesse animam asseveratis, equi plane vel bovis, vel alterius alicujus animalium terrestrium aut volatilium animam habere embryon de conceptione manifestabitur,

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<sup>65</sup> *Defense of Abortion*, 49.

<sup>66</sup> These are small, shaped sponges compressed into gel capsules that dissolve in water. The water causes the shape to expand.

ac secundum naturam hominis per vos homo pater non erit, in prima coagmentatione, sed plantae alicujus, uti dicebam, vel animalium terrestrium alicujus. Et quid hoc esset absurdius aut amentius?<sup>67</sup>

It seems that Messenger, with his invention of a plant soul in human eggs and sperm, has only managed to move the threatened dualism to another ground, splitting the resulting offspring in two by specifying that the plant-life gametes generate a plant-life new body, which body is then further shaped by an animal-life, at which point God generates a truly human soul for that well developed body. It is difficult to understand man as a part of nature or generated by parents or as an animal, if his body, before the coming of the rational soul, is not in any way his body, but the body of members of other species and genera entirely. Robert Pasnau takes a related approach: he argues that for Thomas, “human beings cannot be the product of biological processes. Unlike other animals, we cannot produce offspring without divine assistance,” as if to say that mind is not something that can be generated by nature, but a body fit for that mind can be generated.<sup>68</sup> In this interpretation, semen is the architect of a body fit for a mind, but as it is a merely natural power rather than a supernatural power, a spiritual soul is beyond its reach. The body is constructed during a process of successive animating forms; that is, different lives *using*, as it were, a single body. One wonders, if that embryonic body was not my body, whose was it? This is more reminiscent of the way in which a hermit crab takes up the discarded shell of some other deceased creature and makes of it a home than of the way Thomas views the relationship of body and soul. This position is therefore susceptible to the same charge it levies: that such a view of the embryo reveals a Cartesian, two-substance view of the human being.

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<sup>67</sup> St. Maximus the Confessor, *Ambiguorum Liber. Contra eos qui corpora ante animas existere affirmant* in *Patrologiae cursus completus. Series graeca*. v.91 no.2. Migne, Jacques-Paul, Paris: 1800-1875, 1338.

<sup>68</sup> Cf. Pasnau, *Human Nature*, 104-105.



Moreover, it seems as if this position has simply pushed the problem of continuity of the embryo farther back. Instead of locating the difficulty as between the embryo with the sensitive soul and the embryo with the rational soul, now the yawning chasm lies between the human parent and his or her plant-souled gametes. We do well to wonder how the adult human can produce new organisms that are generic plants, the telos of which is to produce more generic plant lives. These, rather than desiring to grow and reproduce as plants, instead devote all their energy toward developing physically to the point at which they are no longer fit to be plants but must become animals, and then finally rational and human. Joseph Needham also interprets Thomas this way. In his opinion, given the succession of souls Thomas describes, “it was difficult to say that man generated man at all; on the contrary he could hardly be said to generate more than a sensitive soul which died before birth.”<sup>69</sup>

Where does this desire come from, this disposition that moves a plant towards its own demise rather than to the further life and generations of its kind? The life of the plant ends with the generation of the animal, and the animal with the generation of the human. They do not obey the law Aristotle observes in the natural world:

For since it is impossible that such a class of things as animals should be of an eternal nature, therefore that which comes into being is eternal in the only way possible. Now it is impossible for it to be eternal as an individual—for the substance of the things that are is in the particular; and if it were such it would be eternal—but it is possible for it as a species.<sup>70</sup>

The remote principle of animals, the goal of their existence, is generation, since only as species and not as individuals do animals approach an eternal existence.

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<sup>69</sup> *History of Embryology*, 93.

<sup>70</sup> *Generation of Animals* II.1.731b31.

Aristotle is clear that generation is a nutritive power and proper to the nutritive soul. The nutritive power at work in the father's semen is a manifestation of the father's intellectual soul, which, as Thomas is quite clear about, includes virtually within it all powers appropriate to both sensitive and vegetative souls. The semen cannot possess its own plant soul, as Messenger imagines, because then it is the plant and not the man who is father to what is generated, and there is no human nature to be passed on, only plant nature, because the semen cannot be the agent of the father if it has its *own* life. It becomes instead a strange new plant life using the father as host for itself and its progeny, which is ridiculous. For Thomas, then, the semen is that part of the father which manifests the generative power of his rational soul. The semen is human in the sense that it is part of the father's body and made alive with it by his soul. While Aristotle admits that "[t]here is a considerable difficulty in understanding how the plant is formed out of the seed or any animal out of the semen,"<sup>71</sup> surely we should not be satisfied with an account that raises more problems than it solves.

### **A Further Problem: Mistaking '*Look*' for *Being***

Daniel Dombrowski and Robert Deltete, writing fifty years after Messenger, agree that all positions which identify the embryo as a human being are by necessity preformationist and may be traced directly to those whimsical drawings of tiny human beings, one generation waiting dormant in the next back to infinity, like so many Russian stacking dolls. They also explicitly include modern 'pro-life' views in this criticism: "it was because preformationism was believed to be true, and believed to be true on 'modern' scientific grounds, that it became popular to think that to kill a fetus in the early

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<sup>71</sup> *Ibid.*, II.1.733b24-25.

stages of pregnancy was to kill a tiny, perfectly formed human being.”<sup>72</sup> They argue that it is those who think of the embryo as already human who are basing their views on the appearance of the embryo, that they must be picturing a little baby, just very, very small. This seems to me problematic at the least, when the arguments for immediate animation or the personhood of the embryo tend to depend, as we shall see in Chapter 4, on the organizational structures already emerging within the early embryo, and on its continuity of development with other human life stages.

On the other hand, those favoring delayed animation, or who perhaps grant that the embryo is biologically human but not in any sense a person, tend to ignore or downplay in their writing the structures, development, and intrinsic activity of the embryo in favor of highlighting its “look.” It is only an “unformed mass of cells.”<sup>73</sup> For instance, Dombrowski and Deltete suffer from the same shortcoming they assign to those who think life begins at conception. That is, because they cannot see something that “looks” like a mature organ, there is no meaningful organization at earlier stages of embryonic development.

It is during the second month of pregnancy that most of the major organs *start* to form in the fetus. By six weeks the fetus is recognizably human *in the sense that* it has a rudimentary face, limbs, and so on. Opponents to abortion might be tempted to think that the early fetus is therefore a complete human being in miniature, such that from this point on all that happens is that everything grows proportionately larger until birth.<sup>74</sup>

They expect that it is the appearance of limb buds and the eyes as dark spots in the embryonic head that endears the embryo to opponents of abortion, and tricks them into seeing it as human. It is their perspective, however, which mimics preformation, in that

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<sup>72</sup> *Defense of Abortion*, 38.

<sup>73</sup> Pasnau, *Human Nature*, 108. “...we can attack the pro-life position at its weakest point: at its claim that an unformed mass of cells can genuinely count as a human being.”

<sup>74</sup> Dombrowski and Deltete, *Defense of Abortion*, 12.

they cannot imagine the same entity as both human and at the same time as in need of development rather than mere growth. Simply put, they do not think of a human being as something that can develop, only as that which results from the development of something else. For example, contrary to what Dombrowski and Deltete have led us to expect, when Messenger himself describes the two-month old embryo and considers its remaining tasks over the remaining seven months of gestation, he does what Dombrowski and Deltete think only an opponent of abortion might do, and identifies the remaining activity of the embryo as “simply” growth rather than further development, finding that by the time the embryo begins to *look* like “a baby mammal,” “the general form has been assumed.”<sup>75</sup>

The assumption that the delayed animation position alone can deal with the prospect of real development is puzzling. The opposite seems more likely, in that it is the most prevalent iteration of the delayed animation position which, in order to explain the development of an embryo, must posit a succession of distinct organisms successively living and dying and giving rise to other, different lives. Pasnau implicitly recognizes the difficulty in this position when he adds many, many more subsequent forms to the vegetative and substantial forms already identified by Thomas.<sup>76</sup> It is much easier to

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<sup>75</sup> *Theology and Evolution*, 228, emphasis added. With these words Messenger quotes a passage in H. G. Wells, Julian Huxley, and G. P. Wells, *The Science Of Life* (Garden City, N.Y.: Doubleday, Doran & Company, Inc., 1931), 93.

<sup>76</sup> He writes that “[a]lthough Aquinas never mentions more than five or so different transformations – seed, blood, vegetative soul, sensory soul, rational soul – it seems clear that the actual process involves a much greater number of forms, each one quickly passing,” quoting a passage from *Summa Contra Gentiles* (II.89.1745) in his defense: “The loftier a form is, and the more distant from the form of an element, the more intermediary forms there must be by which we gradually come to the ultimate form, and consequently the more intermediary generations” *Human Nature*, 123. But if we take this idea seriously, we either understand the embryo to be enformed by a succession of souls appropriate to the kinds of known plants and animals existing as mature specimens in the natural world, in which case the embryo is successively moss, spinach, orchid, oak, coral, plankton, frog, etc.; or we explain the embryo’s development by inventing perhaps infinitely many *new* species. Both have their own difficulties. Moreover, this is foreign to the way Thomas speaks of nature and of the three kinds of souls. As a result it is impossible to take this

account for real change, if individual being may not change in any drastic way, if one speaks of innumerable individual incremental changes rather than a handful of more drastic changes. On the other hand, as we will see, modern immediate animation arguments are most often about potential and self-development, and as such are based on a view of the embryo, and indeed of all human beings, as self-making across the long trajectory of human living. Though quite a few have made the claim that it is endemic to the position, I am not aware of any major arguments for immediate animation or immediate personhood that depend upon imagining the early embryo as a homunculus. Quite the contrary: an approach to the embryo, and to the person as a whole, which can account for one individual which endures change in some meaningful way, makes much better sense of the biological data on the embryo, and can account for the sort of gradual perfecting and changing manifested in human life. That is not to say, however, that immediate animation is Thomas' position on the embryo, or even that such a view is compatible in a broad way with certain points of his philosophy. Certainly, this deserves much further discussion, and though we only hint at possible difficulties and possible solutions, both will soon be examined with much more care. It suffices at this point merely to indicate.

Donceel's 1967 article, "Abortion: Mediate v. Immediate Animation," has some arresting language remarking on the Church's habit of using the *look* of the (aborted or miscarried) embryo, to decide whether it would be treated as a human person, in which case it ought to be baptized, or as not a human person, in which case no baptism or other rites is appropriate:

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account seriously as representing what Thomas himself actually held. Pasnau may have gotten this idea from de Dorlodot. *Darwinism and Catholic Thought*, 109-10.

The hylomorphic doctrine of St. Thomas, according to which a human soul can exist only in a human body, was held by Catholic thinkers until the end of the eighteenth century. Throughout most of this time the law of the Church forbade one to baptize any “foetus abortivus” which showed no human shape or outline.<sup>77</sup>

In the next few sentences he goes on to contrast this with the *look* of the homunculus.

Because those imaginative illustrations *looked* human, it was assumed that it must *be* human, and so possessed the spiritual soul. It is as if, in both cases, the *look* and *form* of the body have been conflated, which is certainly easy in the English language, as form often means just that: the outline or appearance of something. To borrow Aristotle’s favorite word picture, perhaps the form of the statue is also its shape, its *look*. But it is also more than that, and never is this clearer than in the case of the human being.

C. S. Lewis once concocted an allegorical journey in which the hero, upon being thrown in a dungeon, is tormented with visions of what he and fellow prisoners would look like if their skin were transparent: a repulsive lump of entrails and pulsating organs, all bisected with ropes of livid muscle and ridges of pale white bone. The poor man is overcome by the thought that he is seeing what they really are: grotesque sacks of squirming meat. But this is not *what* he is, only what one part of him *looks like* under certain limited conditions. It is a “trick reality.”<sup>78</sup> So also, embryos are more than their look. Their organization escapes the view of someone who expects that human internal organization must look like the mature specimens of liver, lung, or spleen to which they are accustomed, and not, for instance, like the nucleus of the newly-formed zygote or the primitive streak within the blastula.<sup>79</sup> These are examples of a reductive approach in

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<sup>77</sup> 168.

<sup>78</sup> *The Pilgrim’s Regress*, (Grand Rapids: Eerdmans, 1992), 62.

<sup>79</sup> Benedict Ashley makes the argument that the nucleus of the zygote ought to be understood as an organ, and as the primary organ of the organism. “A Critique of the Theory of Delayed Animation” in *An Ethical*

which certain data, often limited to an aspect of the physical appearance of a being, is treated as representing the entirety of that subject in a way that conflates the two. While it is often the pragmatic choice to operate *as if* ‘look’ revealed being in one’s day to day living, intellectual inquiry demands more.

Patrick Byrne makes a similar distinction within the context of the stem cell debate, employing the language of theologian and philosopher Bernard Lonergan to differentiate between two very different approaches to understanding the embryo. In this model, “commonsense description” refers to the subject in terms of its relation to our senses, our needs, etc. while “explanatory knowledge,” is an attempt to understand something not only in relation to us but in relation “to all other things without restriction.”<sup>80</sup> There are pragmatic benefits to description, and this is perhaps most appropriate for daily life.<sup>81</sup> But mere description is not sufficient if we wish to thoroughly understand any part of the world. Likewise, description is not sufficient if we wish to understand what sort of being the embryo is while it ‘looks’ like an undifferentiated mass, and we ought to try to attempt an explanation of its being rather than interpreting it solely in terms of the way it appears to our senses, or in the case of embryonic stem cell research, in terms of its usefulness to us. Byrne identifies the same habit in popular accounts as I have in academic writing, of describing the embryo in reductive ways, the better to contrast it with the “look” of a more physically mature human being, offered as

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*Evaluation of Fetal Experimentation*, edited by Donald G. McCarthy and Albert S. Moraczewski, (St. Louis : The Pope John XXIII Medical-Moral Research and Education Center, 1976).

<sup>80</sup> *Foundations of “The Ethics of Embryonic Stem Cell Research”* Patrick H. Byrne Department of Philosophy, Boston College Lonergan Workshop, June 18-22, 2007. Byrne references Bernard Lonergan, *Insight: A Study of Human Understanding*, Collected Works of Bernard Lonergan, vol. 3, edited by Frederick E. Crowe and Robert M. Doran, (Toronto: University of Toronto Press, 1992), 528.

<sup>81</sup> In Lewis’ story, the hero’s rescuer remarks that understanding the human being as a jumble of organs and other tissue is appropriate and useful to the surgeon, if it is nowise the whole truth about a person, nor the way we should regard ourselves or each other.

a demonstration of real difference. An explanatory approach to the embryo might begin with more attention to the multitude of facts regarding its organization and development, which we will consider in more detail in the next chapter.



*“Unlike the bacterial cell, the amoeba or the zygote, a human individual does not have the potency to give rise to identical twins through division. Our constant experience shows that cutting a human individual in two simply kills that individual.”*  
 -Norman Ford<sup>1</sup>

## Chapter 3: Individuality of the Embryo and Other Technical Disputes

### Overview

In more recent years, the debate about the embryo centers, not around past scientific foibles and their attending philosophical views, but on keeping up with new advances in the field of embryology, or as specialists prefer to refer to it, developmental biology. The conversation generally turns on the data regarding the embryo’s early development and on the appropriate interpretation of that data, particularly with regard to the phenomena of twinning, totipotency, and most of all, the question of individuality.<sup>2</sup> Much argument in this vein is not set explicitly within Thomas’ philosophy or posed as a question for him to answer on his own behalf, in contrast to the work of de Dorlodot, Messenger, Donceel, and others considered in the previous chapter. Yet even in this more technical context, there is a tendency to refer back to Thomist definitions of concepts like identity, continuity, unity, soul, and even to the idea of a succession of souls in the embryo. The plentiful literature on the subject describes the details of the development of the early embryo or *pre-embryo* with particular attention to the possibility it will develop into two (or more) embryos rather than one, and to the implication that because of this, the early embryo is not really an individual.<sup>3</sup> Closely interwoven with this problem is the

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<sup>1</sup> *When Did I Begin?*, 173.

<sup>2</sup> Mark Johnson identifies the same trends in the debate: “Reflections on Some Recent Catholic Claims for Delayed Animation,” *Theological Studies* 56 (1995), 758.

<sup>3</sup> In the context of this discussion, what some have called the early embryo is often referred to as the “pre-embryo” in order to distinguish earlier stages of development from post-implantation stages.

nature of the cells that comprise the zygote. After fertilization, the resulting zygote is first one cell, which in a process called cell cleavage, duplicates itself by splitting in half. This process is repeated two more times until the zygote is comprised of not one or two cells but eight. Each of these eight blastomeres possesses totipotency, or the ability, under certain circumstances, to serve as the first cell in a new process of development for a new organism. Given the possibility of twinning and the totipotency of the blastomeres, the question arise as to whether the zygote, comprised of these totipotent cells, is really one being, when it is also potentially more than one.

Norman Ford is probably the best known early proponent of the idea that the embryo—and thus the human being—does not begin until the possibility of twinning and the totipotency of the blastomeres have resolved into the differentiation and unquestionable individual unity of the newly implanted embryo. In his influential book *When Did I Begin?*, he acquaints readers with some very compelling data on the embryo, focusing on the zygote and its blastomeres, the data that persuaded him to reconsider his own earlier views. He begins the book with a particularly gracious and thorough presentation of an immediate animation position. So compelling is this presentation, that the reader may be surprised to find out that Ford believes the earliest the human being may be said to exist is at fourteen or fifteen days after the beginning of fertilization.<sup>4</sup> He situates his work within the tradition of Aristotle and Thomas, out of admiration for the former's particular ability to “harmonize his vast empirical observations...with the requirements of a philosophical interpretation,” noting that “[t]here is no opposition between the facts as they were known in his day and his metaphysical categories and

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<sup>4</sup> Ford, *When Did I Begin?*, 172.

principles.”<sup>5</sup> Ford wishes to do the same thing, given the further data on the embryo available to him. He argues, in contrast with the immediate animation position he himself once held, that if only one took into account modern scientific knowledge about the embryo, it would be clear that the embryo cannot be a human being from conception. Ford follows Aristotle not only with regard to his high view of scientific observation, but also to his basic metaphysics, finding in his concepts (e.g. the causes, potentiality and actuality, form and matter) the wherewithal to make sense of the embryo’s ontology in light of scientific data.

### **Twinning**

Twins, while not rare in human pregnancies, are at least uncommon: they comprise slightly more than 3% of live births.<sup>6</sup> Of these, roughly 90% of twins are dizygotic, meaning that each twin develops from a separate fertilized egg. Monozygotic twins are much less common. They occur when the fertilized egg, or more precisely, the zygote, develops into two embryos rather than one. This most often happens early in cell cleavage. When the separation occurs at the two-cell stage, each embryo has its own placenta and amniotic sac. If the separation occurs later, at the blastocyst stage, the twins may share a placenta. Separation that occurs later may result in twins which share a placenta and amniotic sac, or even twins which are conjoined.

The philosophical difficulty lies in understanding how to view the zygote, given the rare but real possibility that the zygote may develop into not one, but two or even

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<sup>5</sup> *Ibid.*, 19.

<sup>6</sup> Higher-order multiple births are of course much, much rarer. Specific information on twins here and in the sentences immediately following is taken from Langman’s *Medical Embryology*, 12<sup>th</sup> ed., edited by T. W. Sadler (Baltimore, MD: Lippincott Williams & Wilkins, 2012), 110-12.

more individuals. It might seem patently obvious that because the zygote is both individual and human, and because it will develop into the morula, then the blastula, gastrula, and finally the embryo, that it has at least some claim to identity as a human individual. Ford's preliminary definition of the human being is "a living individual with the inherent active potential to develop towards human adulthood without ceasing to be the same ontological individual."<sup>7</sup> Certainly, the zygote seems to meet all of those criteria. Ford warns, however, that

...once we assume that the zygote is a human individual because it has the natural active potential to develop into an adult we begin to run into difficulties. The same zygote would also have the natural active potential to develop into two human individuals by the same criteria. We would legitimately ask whether the zygote itself would be one or two human individuals. It would seem absurd to suggest that at the same time it could both be one and more than one human individual, granted that each must be a distinct ontological individual.<sup>8</sup>

Can something which may become two human individuals really be one individual? Can it really be an individual at all?

This raises a further concern: can Twin A and Twin B ever have been the zygote which separated into two distinct human beings? It seems impossible for a thing to be both one and two, at the same time, as in the case of a zygote which twins. Likewise, it seems impossible for a thing to be both one and potentially two at the same time, as in the case of a zygote which may twin, but does not. Ford elucidates the potential difficulties for readers:

The fact that identical twinning may occasionally occur at the zygote stage when it divides into the first two daughter cells raises a difficulty for the zygote being a human individual. If the zygote is a person, which of the two identical daughter cells is the original person when twinning occurs at that stage? Logic and common sense would favour saying two new human individuals begin in that case. The argument can be taken further. Every zygote has the capacity or

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<sup>7</sup> *When Did I Begin?*, 85.

<sup>8</sup> *Ibid.*, 120.

potential to form twins at that stage. In other words, every human zygote, in the hypothesis under consideration, would be a human individual because of its central organization and capacity to continue as the same ontological individual until the adult stage. At the same time, and by the same token, each zygote could be regarded as two human individuals, because it also has the capacity to become two human individuals. How could a zygote be one distinct human individual whilst it still had the capacity to become more than one distinct individual? It might be said that a cutting from a tree, once planted in the soil, may give rise to another tree without prejudice to the fact a tree was there in the first place. The short answer is that a tree is not a human zygote or a human individual. The biological structures of the tree and the human zygote reveal the essential differences that are relevant to determining whether one living individual continues in being or whether two new ones begin.<sup>9</sup>

Because of this, it seems impossible to grant that the zygote is a human individual, and likewise, that any human person begins with the zygote.

In the passage above, Ford alludes to the “biological structures...of the human zygote” which “reveal the essential differences that are relevant to determining whether one living individual continues in being or whether two new ones begin.” He refers here to blastomeres, or daughter cells, formed by successive cell cleavage in the zygote, and the origin of a related point of difficulty with regard to the embryo: the totipotency of blastomeres in the zygote.

### **Totipotency**

Prescinding from the problem posed by twinning, it seems at first glance that the embryo, even from its beginning as a zygote, is clearly living, individual, and manifests ongoing development towards human adulthood; that is, it is a human person.

The embryo from the outset has the inherent natural active capacity to direct and organize its own self-maintenance and self-development in relation to the structures and functions of its various parts, tissues, and organs. This *apparently* occurs within the unity of a single multicellular human organism that continues to

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<sup>9</sup> *Ibid.*, xvi- xvii.

grow to the adult stage with the very same ontological identity from the single-cell zygote stage. This *seems* to be the start of individuation.<sup>10</sup>

Appearances to the contrary, Ford will make the argument that the cohesive identity earlier manifested in the zygote and later in the emergence of the primitive streak is actually *suspended* during the cleavage stage, disrupting the continuity between zygote and embryo.

Before cell cleavage, the zygote is a single cell with heterogenous parts. So far, at least, it seems evident that the zygote is what Ford likes to call an *ontological individual*, that is, a being *per se*, possessing internal unity. The cell's heterogenous parts are merely differentiated parts within the whole, and are not in themselves individuals in an independent, ontological sense. "The unicellular zygote...is not an aggregate of distinct parts as though each part existed separately resulting in the formation of an aggregate or artificial unity."<sup>11</sup> However, once the zygote divides itself into two cells at the first cleavage, Ford describes a very different association of parts to the whole. Because each blastomere possesses the ability to develop into a new ontological being if removed from the zygote, he believes they should each be understood as individuals, rather than as parts of a whole: "[t]wo new distinct individuals begin even if they are held in close contact with each other by the zona pellucida for many hours."<sup>12</sup> This is an important claim, and one that has sometimes been conflated with the related and more obvious issue of a plurality of individuals as a result of twinning. For Ford, *even apart from twinning*, there does not exist only one ontological individual after the first cleavage. Even if there is

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<sup>10</sup> *Ibid.*, 109. Emphasis added.

<sup>11</sup> *Ibid.*, 108.

<sup>12</sup> *Ibid.*, 125. Though it is difficult to understand how he can view a naturally occurring, necessary stage of the coming to be of humans and other species as a "forced unity," that is indeed what he argues.

only ever one embryo, there is already more than one ontological individual in the zygote after cleavage occurs. Each blastomere is *itself* an ontological individual.

After the first cleavage, the zygote is no longer an ontological individual, because it is many ontological individuals. He writes that

[i]t is not enough for the formation of a new individual to have many individual cells...that merely have the potential to fuse or aggregate together to become a new organism. A living individual, even though dormant, must be specifically determined and actually constituted with its own natural life-principle for it to begin to exist. The constituent cells would have to lose their own separate individuality before they became living heterogenous parts contributing to the maintenance and welfare of a new living individual. Its life-principle would need to take precedence over, and subordinate to its own functioning, the activities of these same cells before a single organism could arise to incorporate them into being part of itself.<sup>13</sup>

In this view, the zygote cannot be understood as an individual because it is comprised of parts which are not yet unified, but are merely in close proximity. That they will eventually *become* one individual out of these many “aggregate” parts is not enough to determine it as already one individual. For this to happen, the parts must become subsumed to the life processes of the individual, and manifest activities which show the priority of the life of the whole. Only then will there truly be an individual. Cell cleavage may be thought of as a developmental and ontological break between the one-celled zygote and the embryo which will later form.

Further, in Ford’s view the one-celled zygote comes to be and then ceases to exist in a matter of hours, when it splits into two daughter cells. This calls into question the idea that the zygote is already a human person, since, if it ceases to exist with the first cleavage, it is not “a living individual with the inherent active potential to develop

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<sup>13</sup> *Ibid.*, 95-96

towards human adulthood without ceasing to be the same ontological individual.”<sup>14</sup> It is not the same being as the embryo which will be formed from the aggregate parts of the blastocyst, and therefore, in itself it has no potential to develop towards human adulthood. In order to hold that the zygote is a human individual, Ford offers, we must be willing to believe that it ceases to exist—without dying or leaving a corpse—when it divides to become two daughter cells. That is, at the close of fertilization when the zygote is first formed, we must believe that a real human being begins, ends, and his or her mass is transformed into two new and unique human beings, which will themselves divide and give rise to other individual human beings at the cost of their own existence. Before an embryo begins, even apart from instances of twinning, several successive generations of human beings must have thus come into existence and then ceased to exist. This is in some ways an extreme interpretation of the Thomist or Aristotelian concept of a succession of souls, with the added burden of identifying each successive being as both truly different and truly human. In light of this, Ford believes

[i]t would be more realistic to abandon the thesis of the zygote being a human individual in favour of it being the progenitor cell and originating source of all the genetically identical live cells that eventually become one or more human individuals in the course of normal development.<sup>15</sup>

As a “progenitor cell” we may still think of the zygote as an ontological individual, and as biologically human, but not as an individual human being.

If it is difficult to think of a cluster of cells, each of which are distinct individuals, as eventually uniting to become another distinct individual, Ford thinks the example of chimeras may be instructive. In the case of chimeras, scientists remove individual cells from multiple mouse or sheep embryos, which when properly manipulated, are able to

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<sup>14</sup> *Ibid.*, 85.

<sup>15</sup> *Ibid.*, 120.



interact and together form one new individual embryo, which then may develop into a mature specimen of the species.<sup>16</sup> If this is possible in such unnatural conditions, he reasons, it is not strange to think of the human embryo as formed from individual cells which come together to form another, quite distinct individual.<sup>17</sup> He thinks that it demonstrates “purposeful development...*between* cells, but not *within* an ongoing multicellular ontological individual.”<sup>18</sup> In this way we may understand the cells in the zygote after cleavage as a group of individuals working together, and not as parts of a single individual working in concert.

A number of other difficulties further persuade Ford that he is on the right track with identifying cell cleavage as an ontological break, and therefore confirm his view that human personhood must begin at a later point. One such problem which presents itself stems from the lack of differentiation of cells early on in the process. At the third division resulting in eight cells, “the blastomeres are all distinct, totipotent, undifferentiated homogeneous cells with the same state of specification.”<sup>19</sup> They “are not committed to one developmental pathway” in that one cannot identify one cell which will become the embryo and another that will become the placenta, etc.<sup>20</sup> It troubles Ford that part of the zygote will become what he calls *extraembryonic* tissues like the placenta, umbilicus, and gestational sac.<sup>21</sup> In his view, the simplicity of a single celled organism means that it cannot be differentiated with regard to something that will become the embryo proper,

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<sup>16</sup> A chimera, in this context, refers to a laboratory-created animal, grown from cells originating in different zygotes. For an alternative view of chimerism, see Juan R. Velez, “Immediate Animation: Thomistic Principles Applied to Normal Ford’s Objections,” *Ethics & Medicine*, 21.1 (Spring 2005), 22-23.

<sup>17</sup> *When Did I Begin?*, 145-46; Norman M. Ford, *The Prenatal Person: Ethics from Conception to Birth*, (Malden, MA: Blackwell Publishers, 2002), 66.

<sup>18</sup> Ford, *The Prenatal Person*, 66.

<sup>19</sup> Ford, *When Did I Begin?*, 146.

<sup>20</sup> Ford, *The Prenatal Person*, 66.

<sup>21</sup> Ford, *When Did I Begin?*, 124. Cf. Richard A. McCormick, “Who or What is the Preembryo?” *Kennedy Institute of Ethics Journal*, Volume 1.1 (March 1991), 3.

and what will become structures that will be discarded after birth. This seems to indicate to him that it is not yet an individual human being, but a mass of material which is not yet either the embryo or the accoutrements it depends upon within the womb. Once there is a distinction between inner cell mass and outer cell mass one can differentiate between cells which will become the embryo, and those which will become the placenta, etc.<sup>22</sup>

The fact that two embryos may share a single placenta seems to him to indicate that the placenta cannot be understood simply as an organ proper to the embryonic stage of human development because of the question whether it can be understood as an organ of one embryo in particular, even though he is willing to grant that conjoined twins do in fact exist as distinct individuals even if they share organs.<sup>23</sup>

Some other problems emerge with regard to the scientific data on the early embryo, such as the hydatiform mole, a tumorous mass of placental tissue that develops from an abnormal zygote with an abnormal genetic complement, or questions about whether maternal contributions to embryonic development weaken a view of the embryo as a distinct entity.<sup>24</sup> While these are regularly referred to in the debate as possible hurdles to an immediate animation view, in comparison to the challenges of twinning and totipotency, they pose little threat to a Thomist conceptual framework employed to

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<sup>22</sup> Ford, *When Did I Begin?*, 145.

<sup>23</sup> *Ibid.*, 173. Regarding treating the placenta, etc. as an organ, he writes: "The sharing of membranes and common placenta by monochorial and monoamniotic twins would seem to argue against considering them as constitutive organs of each embryo or developing fetus." *Ibid.*, 133.

<sup>24</sup> I have chosen to focus almost exclusively on the related issues of twinning and totipotency, because in my view it is these which may seriously undermine immediate hominization. The problem of hydatiform moles and maternal contributions to the embryo as it develops pose, in my judgment, little to no real threat, as they are much simpler to resolve and have been adequately treated by others. As Thomas is quite convinced that the embryo does not live by the same soul as either of the parents, but is alive in its own right, I have omitted discussion of maternal contributions in general. Cf. Ronald Tacelli, "Were You a Zygote?," *Revista Portuguesa de Filosofia* 62 (Apr.-Dec. 2006), 893-895; Carlos A Bedate and Robert C. Cefalo, "The Zygote: To Be or Not to Be a Person," *Journal of Medicine and Philosophy* 14 (1989), 641-645; Mark Johnson, "Reflections on Some Recent Catholic Claims for Delayed Animation," *Theological Studies* 56 (1995), 754-757.

grapple with the embryo's ontology. The problem of what has been known as "wastage," a deeply repugnant term, has been broached already in Chapter 2. In this context it is perhaps worth noting Ford's opinion of arguments based on the high rate of early losses. As others have done, he counters by citing an overall historical rate of infant mortality as approaching 50%, a figure at or above the most likely rate of early miscarriage, and from that example, insists that "[i]t cannot be argued conclusively... from such losses alone, that they could not be human persons on the grounds that it would be contrary to Divine Providence for so many persons to die before reaching the age of reason."<sup>25</sup> Certainly, we would not call into question the worth or humanity of young children merely on account of their frailty and the world's harshness. So also we must note that a high rate of death among zygotes cannot be an ontological argument, and is at most a challenge for theodicy.

### **When *Did I Begin?***

After due attention to difficulties attending the identification of the zygote as already a human person, we must agree with Ford that "[i]t is time to attempt a positive identification of when a human individual begins with some degree of certitude."<sup>26</sup> To answer the question *When did I begin?*, he focuses on a particular period during

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<sup>25</sup> *When Did I Begin?*, 181. Thomas Shannon and Allan Wolter, who closely follow Ford in his arguments on twinning and totipotency, disagree. They remark in a footnote that those "who see no insuperable difficulty for the theory of immediate animation in the fact that twins can come from a single fertilized egg should find considerable difficulty in the problem of wastage. To ascribe such bungling of the conceptual process to an all-wise creator would seem almost sacrilegious. One would have to assume that God in his foreknowledge would create souls only for those He foreknew would eventually be born..." Further, "[s]uch vast embryonic loss intuitively argues against the creation of a principle of immaterial individuality at conception. What meaning is there in the creation of such a principle when there is such a high probability that this entity will not develop to the embryo stage, much less come to term?" Thomas A. Shannon and Allan B. Wolter, "Reflections on the Moral Status of the Pre-Embryo," *Theological Studies* 56 (1995), footnote 62 and p. 619, respectively.

<sup>26</sup> Ford, *When Did I Begin?*, 168.

gastrulation, on days 14 through 19 after fertilization.<sup>27</sup> An important factor in his preliminary identification is that at this point the cells of the embryo form three distinct layers, to which specific parts (e.g. skin, nerves, respiratory system, digestive tract, etc.) of the embryo may be traced. The formation of the beginnings of the nervous system (the neural plate) and the cardiovascular system begin to appear, and by the beginning of the third week blood is circulating. At this juncture he is sure that “a single, biologically human, whole heterogenous individual living organism already exists...an individual with a human nature.”<sup>28</sup> Ford is certain that this level of development more than meets his criteria, remarking that it is “a sufficient, but probably not a necessary, condition for an individual human being to exist that it be a living body with the primordium of at least one organ formed for the benefit of the whole organism,”<sup>29</sup> and at this point there are several quite recognizable organs in early formation. Further proof that a human being exists lies in the fact that the embryo is able to receive and process nutrients from the mother and begins to grow.<sup>30</sup>

After establishing a beachhead in the third week, he explores the possibility that the human individual may already be present at an earlier stage. The primitive streak, formed at day 14 or 15, indicates “the position of the embryo proper with the main features of the new individual’s body plan.”<sup>31</sup> That is, Ford believes that the primitive streak realizes for the first time a body with bilateral symmetry, a “heterogenous organic body”<sup>32</sup> in which cells show local distinctions as well as functional distinctions. For the

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<sup>27</sup> *Ibid.*, 168.

<sup>28</sup> *Ibid.*

<sup>29</sup> *Ibid.*, 170.

<sup>30</sup> *Ibid.*

<sup>31</sup> *Ibid.*, 171.

<sup>32</sup> *Ibid.*, 172.

first time, there is a body which obviously admits of left and right, top and bottom, heart versus brain versus liver. “*Prior to this stage it would be pointless to speak about the presence of a true human being in a biological sense*” because there would be, he thinks, no definitively human body, for human bodies have that kind of configuration.<sup>33</sup> Ford interprets the rapidly vanishing possibility of twinning at this stage as further confirmation of his identification of the beginning of the human being: “[t]he potency is lost because there are no more cells or groups of cells there developing to become one or more human individuals. That threshold has already been irrevocably passed once a human individual is formed.”<sup>34</sup>

In Ford’s analysis, before the human being begins to exist at 14 or 15 days

we do not have a living individual human body, but a mass of pre-programmed loosely organized developing cells and heterogeneous tissues until their ‘clock’ mechanisms become synchronized and triggered to harmoniously organize, differentiate and grow as heterogeneous parts of a single whole human organism. In this way the cells lose their own ontological individuality to form a new ontological individual. This change enables many actual individual cells and tissues to realize their potential to become a new multicellular developing human individual with a human nature.<sup>35</sup>

He has identified the zygote as an ontological individual, but not a human being, and now identified the two-week old embryo as the first appearance of the human person. What lies between them is a rapidly cycling series of individual cells, which fission almost as soon as they form, becoming more and more determined. This middle stage, the glaring discontinuity in what would have otherwise been a continuous development of an

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<sup>33</sup> *Ibid.* Emphasis in original.

<sup>34</sup> *Ibid.*. Cf. Ford, *The Prenatal Person*, 67. Ford does not regard rare instances of twinning at later stages, often giving rise to conjoined twins, as problematic. Rather, they are simply “exceptional cases.” *When Did I Begin?*, 173.

<sup>35</sup> *When Did I Begin?*, 175.

ontological human individual, is the nucleus of Ford's position with regard to the embryo, and it is this point in particular which is sharply contested.

### Other Voices in the Debate

A number of other scholars concur with Ford's claim that twinning and totipotency are sufficient reason to posit a later beginning for the human being.<sup>36</sup> Philip Smith, in an explicitly Thomist context, and years before Ford published his best known work on the subject, argues that the embryo cannot be understood as an individual human being, because "philosophical individuality cannot be ascribed to the fetus until its biological individuality has been irrevocably established in the natural order."<sup>37</sup> Some years later, Thomas Shannon and Allan Wolter cite "the possibility of twinning, recombination, and the potency of any cell up to gastrulation to become a complete entity" as reason to believe that "this particular zygote cannot necessarily be said to be the beginning of a specific, genetically unique individual human being."<sup>38</sup> They go even farther, viewing the zygote as not even an "ontological individual," but as merely "the beginning of genetically distinct life."<sup>39</sup> It is difficult to understand what sort of existence they intend to identify for the zygote: it is as if they describe 'life' generically, but admit no subject of that life. One wishes to ask of them *what* it is that is living. This problem is evident again when they discuss what happens in an abortion in the first few weeks when in their view the embryo is not yet a human being: "to abort at this time would end life"

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<sup>36</sup> Cf. Donceel, *Immediate Animation*, 98-99; Jean Porter, "Individuality, Personal Identity, and the Moral Status of the Preembryo: A Response to Mark Johnson," *Theological Studies* 56 (1995), 763-770; McCormick, "Who or What is the Preembryo?" *Kennedy Institute of Ethics Journal*, Volume 1.1 (March 1991), 1-15.

<sup>37</sup> Philip A. Smith, "The Beginning of Personhood: A Thomistic Perspective," *Laval théologique et philosophique*, 39.2 (1983), 205.

<sup>38</sup> *Moral Status of the Pre-Embryo*, 612.

<sup>39</sup> *Ibid.*

but would not be murder.<sup>40</sup> Perhaps the answer to this conundrum is the fact that Shannon and Wolter do not admit that the chemical or otherwise material workings of the body ought to be attributed to the soul, and instead critique the idea that “the human soul is either necessary or directly responsible” for such activities.<sup>41</sup> A closer reading of their position reveals that, in Thomist terms, they view the reality of a single subject in terms of many supervening forms, including the form of individuality, and in this way, for example, something may be human by one form, but not yet an individual.<sup>42</sup> Their timeline is similar to Ford’s, though they add a week to the origin point of the human person, which reflects their view that “until the process of individuation is completed, the [fertilized] ovum is not an individual, since a determinate and irreversible individuality is a necessary, if not a sufficient, condition for it to be a human person.”<sup>43</sup> In their opinion it is not enough for individuation and restriction to have begun with regard to organogenesis and spatial distribution of heterogeneous parts, as for Ford; they believe it necessary that those “rather fluid” processes be completed.<sup>44</sup> Jason Eberl, writing in a more explicitly Thomist context, argues that if one takes Ford’s view on twinning, as he does, blastomeres are merely human biological material. Eberl reasons that one cannot hold both that the early embryo is formed by a nutritive soul *and* that it is not properly one because of the possibility of twinning, for “holding that there is a vegetative soul

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<sup>40</sup> *Ibid.*, 623.

<sup>41</sup> *Ibid.*, 621.

<sup>42</sup> *Ibid.* In this they depend upon and refer to work by Wolter which explicitly combines factors of both a plural substantial forms view and a unity of substantial forms view. See Allan B. Wolter, “Chemical Substance,” *Philosophy of Science*, (Jamaica, N.Y.: St John’s University, 1960), 108.

<sup>43</sup> Shannon and Wolter, *Moral Status of the Pre-Embryo*, 613.

<sup>44</sup> *Ibid.*, 624. Restriction is the process whereby certain components in DNA are activated and others deactivated, such that the cell may develop into some tissues, but not others. It is this gradual process that brings the totipotency of blastomeres to the specific nature of an epithelial cell or a marrow cell, etc.

informing the zygote implies that it is a *unified* living organism.”<sup>45</sup> Departing from Thomas’ account of embryogenesis on this matter, Eberl believes that they are not animated by their own (nutritive) soul, because they are not viable or self-sustaining organisms. If each blastomere were animated by a nutritive soul each would be like amoebas, “able to take in nourishment and sustain its own existence.”<sup>46</sup> Instead, a blastomere is like a human hair follicle: if removed from the body and the life it has in common with it, it will die. This seems to indicate that he views the zygote as participating in the mother’s life, a view which Thomas explicitly rejects.<sup>47</sup>

### **Totipotency Revisited**

While other critics of Ford’s position have focused on finding specific ways to explain how twinning might not actually be problematic for an immediate animation position, Mark Johnson critiques Shannon and Wolter’s work in particular – along with Ford and others by extension - as “not biological enough” in that he believes they

turn too quickly...from the fact of a cell’s so-called ‘totipotency’ to raise questions about the ‘ontological’ unity of the preembryo, and in so doing import metaphysical intentionalities into the discussion that do not fully correlate with the biological activity that is occurring in the preembryo.<sup>48</sup>

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<sup>45</sup> Jason T. Eberl, “The Beginning of Personhood: a Thomistic Biological Analysis,” *Bioethics* 14 (2000), 151.

<sup>46</sup> *Ibid.* It should be noted that Eberl has since become convinced of immediate animation. Cf. Eberl, “A Thomistic Perspective on the Beginning of Personhood: Redux,” *Bioethics* 21.5 (2007); and Eberl, *Thomistic Principles and Bioethics* (New York: Routledge, 2006).

<sup>47</sup> *Summa Contra Gentiles* 2.89; *Summa Theologica* I, 118.2, R. 2.

<sup>48</sup> “Reflections on Some Recent Catholic Claims for Delayed Animation,” *Theological Studies* 56 (1995), 761-762.



He regards his contribution as a much needed further examination of “the minute structures that manifest the intercellular communication occurring within the preembryo, and the corresponding real differentiation of character and function of the cells.”<sup>49</sup>

Johnson modifies Ford’s depiction of blastomeres as interchangeable, totipotent individuals by pointing out a number of small but perhaps significant details. For example, cleavage happens asynchronously; that is, in the second cleavage the two daughter cells do not cleave at the same time, so that at one point in time there are two cells, then three cells, then four.<sup>50</sup> The two daughter cells also cleave along different planes. Based on distinctions in position and distinctions with regard to the amount of cytoplasm retained after cleavage, he argues that they ought to be viewed as organs of the early embryo, rather than as interchangeable individuals in proximity to each other.<sup>51</sup> As Johnson points out, when it is first formed the zygote has no need for organs that respire or circulate or process nutrients. Instead, its need is for organs which will facilitate attachment to the uterine wall: the blastomeres.<sup>52</sup>

At the center of Ford’s argument is the way he describes the blastomeres in their relation to each other. They exist within a shell called the zona pellucida, a remnant of the original maternal ovum. This “contains, protects and holds them together during their early development.”<sup>53</sup> He characterizes the zona pellucida as actively preventing these first two daughter cells from developing into two individuals: “The constricting influence of the zona pellucida usually keeps the cleaving cells in close contact and thereby

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<sup>49</sup> *Ibid.*, 762.

<sup>50</sup> *Ibid.*, 747.

<sup>51</sup> *Ibid.*, 753.

<sup>52</sup> *Ibid.*, 761.

<sup>53</sup> Ford, *When Did I Begin?*, 119.

prevents twinning occurring at that stage.”<sup>54</sup> In other words, the active potentiality of the daughter cells to develop into twin embryos is restricted. If the zona pellucida fails in its natural role of constriction, the natural disposition of the two cells to become two individuals is allowed free reign. “In this way Nature prevents the dispersal of the cells and favours the formation of one human individual.”<sup>55</sup> We should note that he has posited two conflicting natures: that of the zona pellucida, and that of the daughter cells. Whereas Ford views the zona pellucida as actively preventing blastomeres from developing as distinct entities, Johnson highlights the way in which they do not merely touch each other because of limited space, but are physically linked with a number of very small specialized strands. In this way the blastomeres of the embryo do not merely exist in forced proximity to each other but are woven together at many points. It is these bonds, already evident at early stages of cleavage, which, by being shortened, pull the cells together into the definitive hollow ball formation of the blastula.<sup>56</sup>

Johnson directs his attention to the problem of how it is that an “aggregate” of individual beings can come together to form one quite different being, for “at issue here is the orderly procedure of embryogenesis which requires *some* principle of cooperation among the cells.”<sup>57</sup> This is difficult for Ford to navigate, as he must account for the ongoing development and cooperation of the parts of the multi-cellular zygote without compromising the individuality of the blastomeres which comprise it. As Johnson points out, “...if we insist that the preembryo in its many stages is not a developmental individual, we are really insisting that the preembryo, up until whatever time it is

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<sup>54</sup> *Ibid.*, 120.

<sup>55</sup> *Ibid.*, 146.

<sup>56</sup> Johnson, *Delayed Hominization*, 747-48.

<sup>57</sup> *Ibid.*, 754, footnote 21. Emphasis original.

considered to be a developmental individual, has no real, intrinsic principle of unity other than the genetic unity all agree on.”<sup>58</sup> In that case it is very difficult, and perhaps impossible, to account for the way in which the disparate stages and individuals seem to work together in a delicate and detailed process which results in a healthy, well-developing embryo.

[T]he activity that occurs within that whole – the synthesis of proteins, timing of cell division, formation of the blastocyst, hatching from the zona pellucida, on and on – all bear the signs of an order that must derive from within it... The alternative is to say that the events scientists observe are actually unrelated, disorganized states of affairs that result from the haphazard activity of individual cells, cells that form, at best, an incidental unity with no intrinsic principle of order.<sup>59</sup>

In Ford’s narrative, the zygote has no continuity with the mother as host, with the sperm and ova as furnishing the matter of a previous stage, or with the daughter cells it divides into. It exists only to give rise to daughter cells, which exist only to give rise to other daughter cells, etc. Though he attempts to situate this mechanism within a teleological framework aimed at producing offspring, it is much more difficult to interpret a series of stages – in which undifferentiated and ontologically independent cells exist in mere proximity to each other – as related to what is eventually produced by multiple generations of these cells: the embryo. He is so convinced of the data which indicate to him an uncompromising ontological independence of blastomeres that he can only caution readers not to read too much into the data on activities occurring by and in the early embryo. “Purposefulness of living activities alone cannot determine if they are the activities of one individual or interactions between more than one individual.”<sup>60</sup>

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<sup>58</sup> *Ibid.*, 760.

<sup>59</sup> *Ibid.*, 760-61.

<sup>60</sup> Ford, *When Did I Begin?*, 126.

It is more than this, however. Ford, along with Shannon and Wolter, etc. are attempting to find an ontological middle ground which Johnson believes does not exist. Ford defines an ontological individual as “a single concrete entity that exists as a distinct being and is not an aggregation of smaller things, nor merely a part of a greater whole; hence its unity is said to be intrinsic.”<sup>61</sup> Noting this definition, Johnson argues that, because for Ford the early embryo is distinct genetically and not a part of the mother, it must therefore be “an aggregation of smaller things,” or to put it more bluntly, “a heap.”<sup>62</sup> How, Johnson wonders, can this heap make of itself (and out of itself and by itself) the two-week old embryo, the new human person? Thomas Shannon takes issue with this characterization, wishing to specify that what Ford meant, and what he means, is that the blastomeres of a zygote, because they share the same DNA, have a teleological unity in that they will become more and unified until they actually become the genetically identical but ontologically different embryo.<sup>63</sup> This, however, seems to attribute the intelligibility of the process to the aggregate individuals without thereby specifying how it is that they do this, only restating that in fact they do. Shannon, and others with him, intend a teleological unity while attempting to stave off ontological unity. At the least, there is an unresolved tension between how the blastomeres may be viewed as individuals, oriented toward their own growth and development, and how they may be understood as parts of a greater undertaking, the making of the human being.

Other important differences emerge in the way Ford and Johnson regard each stage of embryogenesis. For Ford, in terms of its biology and genetic component, the

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<sup>61</sup> *Ibid.*, 212.

<sup>62</sup> Mark Johnson, *Delayed Animation*, 761, footnote 35.

<sup>63</sup> Thomas A. Shannon, “Delayed Hominization: A Response to Mark Johnson,” *Theological Studies* 57 (1996), 733.

zygote is human.<sup>64</sup> It is not, however, a human being. There is a difficulty, here, in that Ford wishes to insist that it is both human and, in his favored phrasing, an “ontological individual.” It cannot be a *human* ontological individual in the personal sense, he thinks, because it cannot develop into an adult human being. It must instead cease existing as an ontological individual—though perhaps not as human in a biological and genetic sense—when it divides. It is difficult to see how this view of the zygote is not also susceptible to the critique he himself levels at those who view the zygote as an individual human person: we must be willing to believe that at the first cleavage the zygote ceases to exist without dying or leaving a corpse.<sup>65</sup> Perhaps this is not an insurmountable difficulty--in *his* view, the zygote is some sort of “human progenitor cell”<sup>66</sup> rather than a human being. Nevertheless, he wishes to recognize it as a complete entity. He also views ova and sperm as complete entities and as having a sort of “host” relationship with the human body, as do such organisms as bacteria, viruses, and the fetus.<sup>67</sup> By contrast, Johnson describes ova and sperm as merely cells and not organisms, because considered individually, they have no capacity for further development, and neither “seeks nutrition through differentiated parts.”<sup>68</sup> Their short existence is confirmation that they ought not to be taken as individual living entities instead of as parts of their respective bodies. He believes they are not, in Ford’s phrasing, “ontological individuals.”

Johnson contextualizes totipotency as the ability of each cell in the early embryo to replace a cell that is lost, as a protective redundancy mechanism within the embryo,

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<sup>64</sup> Ford, *When Did I Begin?*, 126.

<sup>65</sup> *Ibid.*, 120.

<sup>66</sup> *Ibid.*, 128. The difference seems to be that a human progenitor cell is determined as to species but not as to number; that is, it may become one or more human beings but not any other kind of being, but it cannot be considered a human being itself because it may become more than one individual.

<sup>67</sup> *Ibid.*, 93.

<sup>68</sup> *Delayed Animation*, 752.

rather than as the means by which a twin may be formed.<sup>69</sup> We would do well, he believes, to remember that blastomeres can only display totipotency if they are taken out of the embryo. “[W]hile the blastomeres can...become the source cells for a separate organism, they can do so only when they have been somehow separated from the whole of which they were the parts.”<sup>70</sup> In fact, he believes it would be more accurate to speak of the blastomeres as “potentially totipotent” as they are not actually totipotent within their normal context.<sup>71</sup> He later specifies that the totipotency of the blastomeres should be viewed as potential because it is “conditional.”<sup>72</sup> As long as the blastomere remains

a functioning part of the embryo, it is not working to actualize that ability to become another embryo...In short, the early embryo’s cell is not “chomping at the bit” to be free of the other cells so that it can realize its ability to become a whole other embryo.<sup>73</sup>

Johnson’s account of the data shows the blastomeres as constantly working together and oriented toward each other. Moreover, it is one thing to note that a single cell is totipotent, and quite another to attribute that totipotency to the whole organism.<sup>74</sup> It is not clear how the possibility that one component cell may become the origin of another

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<sup>69</sup> *Delayed Animation*, 737. There may be some modest doubt as to whether human blastomeres, at least, are totipotent. Rose Koch-Hershenov surveys the scientific and philosophical literature on twinning and totipotency, and notes that none can point to a single instance in which a human blastomere was removed from a zygote and grown, as it were, into a fetus. There are, however, examples of failed attempts. In her estimation, “current biological data on the human embryo does not provide sufficient evidence for the totipotency of human embryonic cells” because it is “simply hypothetical” based on experiments on other mammals, “rather than confirmed” directly with human cells. From “Totipotency, Twinning, and Ensoulment at Fertilization,” *Journal of Medicine and Philosophy*, 31 (2006), 140-41. There may of course be such proof at any point, but she makes a fair critique of Ford and others who base their claims on something that as of their writing had not yet technically been verified. Lisa Cahill wryly comments on this technical discussion about the embryo that it “is all too clear from this (ongoing) exchange of scientific trumps...that moral theologians should be wary of finalizing their analysis on the basis of research likely to be indefinite in progress.” From “The Embryo and the Fetus: New Moral Contexts,” *Theological Studies* 54 (1993), 136. At the least, we should bear in mind that any position which rests upon one particular data point may be upset at any moment with any small addition to our knowledge about the embryo.

<sup>70</sup> *Ibid.*, 758.

<sup>71</sup> *Ibid.*, 759.

<sup>72</sup> “A Rejoinder to Thomas Shannon,” *Theological Studies* 58 (1997), 711.

<sup>73</sup> *Ibid.*, 712.

<sup>74</sup> *Ibid.*

individual can invalidate the evident unity actually present in the zygote. I cannot but agree with Johnson that

by focusing on a conditional 'totipotency' of an early embryo's cell Shannon's account treats it not in accord with what it is, but rather in accord with what it might be if it ceased to be a contributing part of the embryo. This I take to be biology by hypothetical possibility, rather than by current actuality.<sup>75</sup>

### **Twinning, Again**

Ford himself identifies two possible ways of addressing his own position on the difficulties posed to immediate animation of the zygote by the possibility of twinning. The first are examples from biology: some kinds of living things give rise to other living things without losing their own lives or identities. Plants, for example, may be propagated by cutting a slip from one plant to be started elsewhere. A second possible way of explaining how one may become two is by fission, similar to the way in which a bacterium replicates by splitting. In this case, the original being ceases to exist, giving rise to two new beings. In this way the human zygote would be actually one but potentially two.<sup>76</sup> He dismisses these possible solutions, insisting that "human individuals do not resemble plants in this respect."<sup>77</sup> This second way, in which the zygote gives rise to two new individuals, would necessitate the end of the (single-celled) zygotes's existence, a result which he believes would be intolerable if we were to view it as already a human ontological individual.

Regarding his first suggestions, certainly at later stages of human development one cannot split an individual down the middle and expect it to re-grow the missing half, nor does one expect a severed thumb to grow into a whole human being, replicating its

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<sup>75</sup> *Ibid.*, 714.

<sup>76</sup> *When Did I Begin?*, 112.

<sup>77</sup> *Ibid.*, 121.

DNA and extrapolating the missing pieces. But perhaps that is because at later stages the human body is locally distinguished with left and right sides, etc. This does not necessarily indicate that the zygote is not a human individual, only that at early stage of human development, relative lack of local differentiation of the embryo's body may not pose the same difficulty regarding this sort of splitting. Regarding his second suggestion, another way of interpreting this problem is to say that apparently, it is part of human nature at the zygote stage to be able to grow by division, without thereby threatening the identity of the individual. It need not be the case, especially in a Thomist context, that the intelligibility and life of a being is lost in a process that enables growth and differentiation by a process of cleavage. There is nothing about the nature of a soul that prevents it from informing an organism comprised of only two parts, nor anything that prevents the animated single-celled organism from continuing to be the same organism with the same soul after it becomes a two-celled organism. As long as the body of the organism continues alive and in the same species, whether it loses or gains some matter, its life, identity, and continuity remain. Thomas writes that "...the parts come and go. Yet this does not prevent a man from retaining his identity from the beginning of his life to the end."<sup>78</sup> If we are looking into beginnings, we ought not to be shocked that the process of a one-celled organism becoming a multi-celled organism generally involves a point at which the organism is comprised of two cells. There is nothing about a two-celled organism that makes unity impossible.

Johnson points out that the "extreme infrequency" of monozygotic twinning "should caution us against making it a norm in our interpretation of other biological data that always, or usually occur," and further reminds readers that in evolutionary terms,

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<sup>78</sup> *Summa Contra Gentiles* 4.81.



gestating twins is a maladaptation.<sup>79</sup> Ford's view of blastomeres as individual entities would lead one to expect a higher rate of multiple births than actually occur. Albert Moraczewski makes the same argument: "Less than 1% of born children are identical twins. These would be exceptions to the rule of one oocyte, one sperm, one child. The exception should not be *the basis* for an explanation of embryogenesis, nor, of course, should it be ignored."<sup>80</sup>

The example of cloning provides another popular answer to the problem of twinning, especially as it calls into question whether the early embryo can truly be one individual when it might at some point become two. Sidney Callahan makes the case that it is no threat to individual identity for an entity to have its beginning in a piece of another entity with the example of cloning of adult organisms.<sup>81</sup> In that process, a cell is removed from a mature organism, its somatic material is removed and then inserted into another prepared cell. The organism that develops is genetically identical to its "parent" organism, yet they are distinct individuals. The identity of the mature organism is in no way compromised, but it does indicate, contra Ford, "that for mature humans, *asexual* reproduction is a remote (but real) possibility."<sup>82</sup> So also for the zygote: it might be that in the case of twinning it would lose some material without thereby losing its identity. Moraczewski and Eberl make that very argument.<sup>83</sup> The process of twinning, they believe, is not a case of division, but of the blastocyst losing some of its matter. Because that matter is perfectly disposed to become a human being—it is, after all, totipotent-- it

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<sup>79</sup> *Delayed Animation*, 759.

<sup>80</sup> "Personhood: Entry and Exit," In *Twenty-fifth anniversary of Vatican II*, (Braintree, MA: Pope John Center, 1990), 93.

<sup>81</sup> "To the Editors: Unique from the Start." *Commonweal* 126 (15 January 1999): 4.

<sup>82</sup> Tacelli, *Were You a Zygote?*, 897. Cf. Velez, *Thomistic Principles*, 20-21.

<sup>83</sup> Jason Eberl, *Thomistic Principles and Bioethics*, (New York: Routledge, 2006), 39; Moraczewski, *Personhood: Entry and Exit*, 90.

is immediately informed by the appropriate soul. In such a way another human being comes into existence.<sup>84</sup>

There are a number of passages in which both Aristotle and Thomas consider the sorts of organisms capable of being divided. Anton Pegis comments on these passages that “[i]n some forms of life it is apparently true that the soul is one and yet potentially many because when the parts of plants are broken off they are able to keep on living; which is also true of some insects.”<sup>85</sup> Neither Thomas nor Aristotle seems to be particularly troubled by the phenomenon of certain plants or animals which exhibit this behavior. Thomas’ comments on the passage in which Aristotle considers such occurrences run thus:

...Certain parts, he says, of plants can be cut off and yet seem to go on living; for the cuttings, grafted or replanted, unite with a new stem or with the soil. In these cases the life-principle appears to be actually single but potentially many. The same sort of thing is observable in the forms of inanimate physical bodies; as each such body is actually one and potentially many, so in the lower animate bodies whose parts are still undifferentiated, the soul exists as one whole actually, but as many potentially. For inanimate bodies can be divided into parts which each retain the same specific nature (e.g. air, water, minerals) and this nature was also the nature of the whole body; and it is somewhat the same with plants, the lowest order of animate beings; they require very little differentiation in their parts, and the life-principle of the whole survives, as such, in some of the separated parts. So also with those animals which remain alive after being cut up.<sup>86</sup>

We see here the hint, earlier alluded to, that the relative simplicity of the zygote’s composition might make it the exception to the general rule that if one cuts a human being in half, both halves die. However, that is not to say that both halves existed as distinct individuals already within the whole. To the contrary, Aristotle describes

<sup>84</sup> Cf. Koch-Hershenov, *Totipotency, Twinning, and Ensoulment*, 155.

<sup>85</sup> Anton C. Pegis, *St. Thomas and The Problem Of The Soul In The Thirteenth Century*. (Toronto, Ontario: Pontifical Institute Of Mediaeval Studies, 1978), 178. He refers to *De Anima* II 2 413b16-21, and to Thomas Aquinas, *Aristotle's De Anima with the Commentary of St. Thomas Aquinas*, II, lect. 4, n. 264-265.

<sup>86</sup> *Aristotle's De Anima with the Commentary of St. Thomas Aquinas* II.4.264-265.

earthworms as “actually one, potentially many.”<sup>87</sup> Kevin Flannery parses Aristotle’s text this way: “Before the split, it is one, but potentially two (or more) since at least certain of its parts have within them that which is required to become unities with motive principles of their own.”<sup>88</sup>

This raises another difficulty, however, if we wish to consider the embryo in an expressly Thomist context. The *rational* soul, it seems, does not admit of division. It is not the faculty of a corporeal organ,<sup>89</sup> and therefore cannot be localized within the body in the way Aristotle speaks of the worm’s *motive principles*. It “cannot possibly be divided according to the division of the body.”<sup>90</sup> If the zygote were animated by the rational soul, at the first cleavage, it seems clear that what *cannot* result is two distinct, rationally ensouled blastomeres that are both the same being as the single cell. In other words, they cannot both have existed from the close of fertilization. Fabrizio Amerini thinks it is no accident that monozygotic twinning is a hurdle for modern scholars embracing an immediate animation view of the embryo, though Thomas could not possibly have anticipated it.<sup>91</sup> Rose Koch-Hershenov believes that monozygotic twins are evidence not of the totipotency of all embryonic cells, but of the existence of a few *apparently* single fertilized eggs which become two or more beings. In her view, twins are really evidence that two rational souls are infused into the same single cell at the close of fertilization. She thinks of such souls as “spatially coincident.”<sup>92</sup> During the process of further cell division, the two human beings usually physically separate, but sometimes

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<sup>87</sup> *De Anima* II.2.413b19-20.

<sup>88</sup> “Applying Aristotle in Contemporary Embryology,” *The Thomist* 67 (2003), 175.

<sup>89</sup> Thomas Aquinas, *Summa Theologica* I.76.1.

<sup>90</sup> *Summa Contra Gentiles* II.89.

<sup>91</sup> *Aquinas on the Beginning and End of Human Life*, translated by Mark Henninger, (Cambridge, MA: Harvard University Press, 2013), 69.

<sup>92</sup> *Totipotency, Twinning, and Ensoulment*, 160.

fail to, resulting in conjoined twins. It is difficult to imagine how she thinks two souls may actuate the same matter; at least for Thomas, this is quite impossible. It is the matter which distinguishes composite individuals of the same species. In this case, there is no distinction of matter. She recognizes this problem, but thinks that humans may be treated as the exception to this rule given their nature, taking the existence of human separated souls as evidence that they depend so little on the matter for their existence that they may share the matter of their existence for a limited time while it is being shaped.<sup>93</sup>

### **Weighing the Options**

Totipotency may prove a barrier to immediate animation, but only if one were to hold Ford's view on the radical independence of the blastomeres. That characterization is compelling, but faces a serious challenge by the work of Mark Johnson and others, who stress a fuller data set on blastomeres as interconnected and working together. At the least, Ford's claim that the zygote has a "natural active potency" to twin is compromised.<sup>94</sup> Twinning is less amenable to the idea that all of us without exception may trace our beginnings to a fertilized egg, but given that monozygotic twinning is quite rare, it seems less than reasonable to pattern our understanding after the outlying data points, rather than attempting to account for them as variants within the explanation that makes the best sense of the overwhelming majority of the data. It does seem that in some cases, at least, a twin may not be able to trace his or her existence to the same zygote or complement of blastomeres within the zygote as the other twin, but instead to one

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<sup>93</sup> *Ibid.*

<sup>94</sup> *When Did I Begin?*, 128.

blastomeres from within that zygote. It is unclear to me how this could invalidate the zygote as the first appearance of the other twin.

In writing or thinking about this matter, it becomes evident that it is difficult to separate the problem of twinning from the problem of totipotentiality; the one seems to bring the other along with it at every step. Part of the furor regarding how the embryo develops stems from our difficulty in imagining how a two-celled organism can be the same organism it was before it tore itself in two parts. But there is an ongoing intelligible unity in that organism, too, even though it does not follow the pattern we are used to dealing with in human development. I wonder if the real reason some have held that the human being cannot begin with a single cell is that the only way for a single cell to differentiate itself is to become two, and then more. It strikes me that the apparent difficulty of viewing the multi-celled zygote as one individual human being has more to do with a numerology that interprets 'one' as the number of unity and 'two' as the number of duality. The zygote is developing itself the only way it can, and also in a way that admirably suits its needs: it needs many, many parts in order to be able to set some of those parts aside for one purpose, and other parts for another purpose, etc. In the meantime, the parts it has are perfectly disposed to doing the important job of attaching the embryo to the uterine wall so that the embryo will be able to draw nutrients from the mother and not only develop, but grow.

*“But surely the end is the natural consequence of that which the animal already is.”*  
 -Kevin Flannery<sup>1</sup>

## **Chapter 4: Immediate Animation, Efficient Causality, and Potentiality**

Proponents of immediate animation, believing that the human embryo has the rational soul upon the close of conception, must establish the zygote as already human. To do that, they must identify within the zygote – and within ensuing configurations of the embryo – the presence of human structures or characteristics, and make the case that these are sufficient to establish it as already what it will further make manifest in later stages of development: a human being. Immediate animation arguments focus on identifying ways in which the one-celled zygote and the embryo it becomes should be understood as already human in the personal and not merely biological sense.

This may be particularly difficult to do in an explicitly Thomist context, because of the way Thomas thinks of the soul and body as together comprising one being. They are not two parts of a whole, but a whole which is at the same time a form animating matter, and matter in which the form exists and through which it exercises its power. Given how closely related they are, there must be some sort of suitability of form and matter to each other. At the least, a soul requires diversity of parts in the body.<sup>2</sup> Moreover, the more noble a soul, the more diversity it requires in regard to organs, that it may exercise its many powers through these different organs.<sup>3</sup> The rational soul, though its highest functions are not exercised directly through one organ, nevertheless needs to

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<sup>1</sup> *Applying Aristotle*, 261, footnote 25.

<sup>2</sup> *On the Soul* X.2.

<sup>3</sup> *Summa Contra Gentiles* II.86.4.

be united to a body which is highly specialized with regard to its ability to sense.<sup>4</sup> Sense knowledge is a kind of material cause of intellectual knowledge, for it is the phantasms which provide the sense data for the active intellect.<sup>5</sup> The active intellect “causes the phantasms received from the senses to be actually intelligible, by a process of abstraction.”<sup>6</sup> Therefore, in Thomas’ words, “it behooved the intellectual soul to be united to a body fitted to be a convenient organ of sense.”<sup>7</sup> A human body ought to be even more perfect than an animal body with regard to the ability to sense, because the degree to which the body can receive sense data determines how well the person is able to employ their intellect.<sup>8</sup>

Though profoundly moved by the order and goodness of the natural world, Thomas was no naturalist himself, and so simply accepted Aristotle’s fairly sophisticated account of the embryo’s development. When Aristotle writes about the beginning of generation, he likens it to the process of curdling milk, perhaps by way of making yogurt or cheese. The male’s semen is like the rennet or curdling agent acting on the female’s menstrual blood, which is like the milk, the raw material for the process.<sup>9</sup> Like yogurt, the embryo takes time to “set,” several days, in fact, while the heat and frothiness (*pneuma*) of the semen work on the menstrual blood.<sup>10</sup> In the process, solids and liquids are separated, and the solids gathered together. A sort of membrane forms around the

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<sup>4</sup> “But the human intellect...is not the act of an organ, yet it is a power of the soul which is the form of the body.” *Summa Theologica* I.85.1.

<sup>5</sup> *Ibid.*, I.84.6.

<sup>6</sup> *Ibid.*

<sup>7</sup> *Ibid.*, I.76.5.

<sup>8</sup> “Therefore the body to which the intellectual soul is united should be a mixed body, above others reduced to the most equable complexion. For this reason among animals, man has the best sense of touch. And among men, those who have the best sense of touch have the best intelligence.” *Ibid.*

<sup>9</sup> *Generation of Animals*, I.20.729a32.

<sup>10</sup> *Ibid.*, I.23.731a20.

settled solids.<sup>11</sup> There are no parts immediately evident. The first part which subsequently comes into being is the heart, which is “the first principle of both homogenous and heterogenous parts.”<sup>12</sup> As Thomas held that “the body cannot receive the soul before it is in any way whatever provided with organs,” the embryonic body cannot be informed by the rational soul before that point.<sup>13</sup>

One of the most striking aspects of Aristotle’s embryology is the extent to which the making of the embryo is due to the father’s semen.<sup>14</sup> He knew nothing of sperm or DNA, and indeed, he believed the sperm added nothing material to what was conceived, but only the motion necessary to move the parts latent in the mother’s menstrual blood into actuality.<sup>15</sup> Thomas identifies in the father’s semen a “formative power” which shapes the embryo during its animation by nutritive and sensitive souls in preparation for the rational soul. This virtue

which is severed together with the semen and is called the *formative* virtue, is not the soul, nor does it become the soul in the process of generation: but, since it is based, as on its proper subject, on the (vital) spirit contained in the frothy semen, it causes the formation of the body in so far as it operates by virtue of the father’s soul, to whom generation is ascribed as the principal agent, and not by virtue of the soul of the person conceived, even after the soul is in that person: for the subject conceived does not generate itself, but is generated by the father.<sup>16</sup>

For Thomas it is the semen which is responsible for shaping the embryo’s organs, and likewise responsible for the embryo’s generation. The embryo, while itself alive, animated by its own nutritive or sensitive soul and not with the soul of either mother or

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<sup>11</sup> *Ibid.*, II.4.739b22-27.

<sup>12</sup> *Ibid.*, II.5.741b15-16, II.4.740a17-19.

<sup>13</sup> *On the Power of God* 3.12.

<sup>14</sup> That is, according to the interpretation common within the Thomist debate about the embryo. Another interpretation may be at least as valid. This possibility will be explored in later chapters.

<sup>15</sup> *Generation of Animals* I.21.729b5-14, *Ibid.*, I.22.730b9-24, *Ibid.*, II.3.737a25.

<sup>16</sup> *Summa Contra Gentiles* II.89.



father, is nevertheless dependent upon the father's semen to form, or to at least set in motion the forming of, the organs appropriate to an individual of a rational nature.

Immediate animation arguments which occur in a Thomist context generally claim that if Thomas had only known that Aristotle's view of the embryo as a coagulated mass is incorrect, that the zygote from its beginning is an organized and specialized form of life uniquely suited to enacting the rapid growth and development of its own existence, he would have done away with the succession of souls and written about the embryo as receiving the rational soul immediately. The ensuing debate centers on the level of organization Thomas might have thought necessary for rational ensoulment, the agent of change in the embryo, and the meaning of potentiality. More specifically, these arguments tend to stress the importance of the unique DNA complement possessed by the zygote at the close of fertilization, the active role of the zygotic nucleus as the primary organizer, and the ordered interactions and sequences of events which seem to indicate agency in the embryo. Additionally, the argument is made that the early structures evident in the zygote ought to be understood as organs. Further, that as they are the first iterations of the organs which will later enable rational thought, they are sufficient to dispose the body for the rational soul, thus fulfilling Thomas' requirement.

### **Organization in the Embryo**

The first part of the argument hinges on details regarding the embryo that Thomas and Aristotle could not possibly have known. The importance of DNA is relatively obvious. With it, the zygote is literally made out of the information necessary for its development into a mature being. The genetic configuration of the embryo also

constitutes it as utterly unique, save for the rare case of monozygotic twinning. DNA has often been described as a sort of blueprint for the future adult. This is true in a way, but can also be misleading. Francis Wade expresses the problem this way: "...take the example of the genotype. This can be called the pattern or blueprint of what a being will become by its action. But calling it a blueprint leaves out its critical active factor. Blueprints do not *do* anything. Genotypes both control what will be done and *get their action going*.”<sup>17</sup>

This dynamic view of the genetic configuration of the zygote leads us to the next component of the argument. Stephen Heaney believes the only way the succession of souls Thomas posits can make sense is if there is some force or agency responsible for the development of the body during the subsequent animations: “In order to explain the succession of souls, which are not themselves responsible for the formation of the body, there must be an active power, the semen, at work on the passive matter, organizing the body *throughout* the succession of souls. Without this organizing power, there is no way to explain the formation of the body.”<sup>18</sup> And yet, there is a body, and that body is the result of uncounted interrelated processes. Since we know the father’s semen does not, in fact, impart a continuing motion that accounts for the development of the embryo through successive generations, we must look elsewhere for the cause of the embryo’s development. We might note that “one of the characteristic, species-specific acts of a human being is to produce a mature human brain: that only if this organism is *already* a

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<sup>17</sup> “Potentiality in the Abortion Discussion,” *The Review of Metaphysics* 29.2 (Dec. 1975), 242. Cf. Kevin D. O’Rourke, “The Embryo as Person,” *The National Catholic Bioethics Quarterly* 6.2 (Summer 2006), 289; Johnson, *Delayed Animation*, 753; Donald G. McCarthy and Albert S. Moraczewski, eds., *An Ethical Evaluation Of Fetal Experimentation: An Interdisciplinary Study*, (St. Louis : Pope John Center, 1976), 29-30; Joseph T. Mangan, “The Wonder of Myself: Ethical-Theological Aspects of Direct Abortion,” *Theological Studies* 31.1 (1970), 125.

<sup>18</sup> “Aquinas and the Presence of the Human Rational Soul in the Early Embryo,” *The Thomist* 56 (1992), 30.

human being at an early stage of its development will it produce a mature human brain.”<sup>19</sup> Thus the question arises: how would the nutritive- or the sensitive-souled embryo “know” to begin working on an organ it could never itself use, unless it were already human? Without the forming power of the father’s semen, this is difficult to explain. Eberl writes that “[t]he contemporary understanding of DNA...places this formative power in a zygote or early embryo itself and this fact would arguably motivate Aquinas to define a zygote or early embryo as having an active potentiality for rational operations, since it has an *active internal principle* guiding it to develop the requisite organs for such operations to occur.”<sup>20</sup>

Proponents of delayed animation and immediate animation have generally agreed that the modern corollary of the heart, in view of the role it plays in Aristotelian biology, is the brain. Therefore, some who advocate a delayed animation in the embryo mark the twentieth week of gestation, when the brain is more fully developed and higher level thought thus made possible, as the point at which an embryo may be said to be human, animated by a rational soul.<sup>21</sup> Those advocating immediate animation generally argue that the zygote, from the end of fertilization, has an organ which functions as a sort of brain, or rather, as an *organ of central control*: the zygotic nucleus.

Clearly, if it is an organ of central control, it is a very primitive one. However, perhaps that is fitting, given the relatively low level of complexity in the zygote. Johnson argues that

It need not be the case that [the organ of central control] first exist and function as a fully mature organ, since at the beginning of life the organism’s differentiation

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<sup>19</sup> Tacelli, *Were You a Zygote?*, 893.

<sup>20</sup> Jason Eberl, “Aquinas’s Account of Human Embryogenesis and Recent Interpretations,” *Journal of Medicine and Philosophy* 30 (2005), 386.

<sup>21</sup> Pasnau, *Human Nature*, 111; Joseph Donceel, *Immediate Animation and Delayed Hominization*, 83.

will be minimal, and its actual functions few. Hence, for reasons of developmental economy it is to be expected that the organ of central control will also undergo gradual differentiation and unification before its maturity is reached, a maturity that is proportionate to the maturity of the differentiated organism.<sup>22</sup>

That is, the organ of central control ought to be suited to and in due proportion to the organism in which it functions. As the organism grows, changes, and develops, it is fitting that its organizer ought to grow, change, and develop itself. After all, even the adult brain still remodels itself to some extent based on need, or in response to catastrophic events, or even in the process of something as simple as acquiring new memories or habits.

By contrast, some who hold a delayed animation position regard the embryo as fundamentally unorganized. Dombrowski and Deltete liken the nerve cells that appear in the 4-week old embryo to a heap of components: “A pile of wires and switches is not the same as an electrical circuit, and a collection of microchips is not a computer. Likewise, a functioning central nervous system with a brain, which *starts* forming around fourteen weeks, is not really operational until synapses start to appear around twenty-four weeks.”<sup>23</sup> They insist on a ‘real’ and not a ‘virtual’ organization within the embryo, and are not persuaded that DNA in the zygote is in any way the equivalent of an organ.

Norman Ford speaks for many when he writes that “[t]he genetic instructions for the formation of the whole human being and its organs must not be confused with the actual human being and its organs.”<sup>24</sup> He is equally convinced that Aristotle would insist on the same standard: “some minimal, but actual, formation of sense organs for the presence of a sensitive soul and the complete generation of a specific animal. This would also be

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<sup>22</sup> *Delayed Animation*, 751.

<sup>23</sup> *Defense of Abortion*, 56-57.

<sup>24</sup> *When Did I Begin?*, 170.

required in the case of a human.”<sup>25</sup> The two camps disagree heatedly as to whether a primitive structure which manifests effective but relatively simple control can be regarded as any way on par with the many distinct organs necessary for embryonic life at later stages. Further fueling this disagreement is the lack of evidence with regard to physical traceability of the specific matter of the zygotic nucleus. Where does it go, what happens to it, when the zygote cleaves? Are there then two organs? It is easier, perhaps, to see how one may trace the primitive streak to cells in the ectoderm during gastrulation, than to see how the primitive streak may be traced through the cleavage of undifferentiated, totipotent blastomeres back to the zygotic nucleus.

Nearly forty years ago, Benedict Ashley wrote a formidable piece making the case for immediate animation in a Thomist framework.<sup>26</sup> Like Joseph Donceel, Ashley wishes to apply Thomist principles to the biological data on the early embryo in the hope that science and philosophy can tell us what sort of thing such a being is. He freely admits that Thomas himself,

following Aristotle, argued that the human embryo is first alive only with vegetative life, then with animal or sensitive life, and only after at least 40 days of development is it prepared to become a human person by receiving a human, intellectual soul from the Creator.<sup>27</sup>

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<sup>25</sup> *Ibid.*, 35.

<sup>26</sup> “A Critique of the Theory of Delayed Animation,” in *An Ethical Evaluation of Fetal Experimentation*, edited by Donald G. McCarthy and Albert S. Moraczewski, (St Louis, MO: Pope John XXIII Center, 1976), 113-137. Cf. Benedict M. Ashley and Albert S. Moraczewski, “Is the Biological Subject of Human Rights Present from Conception?” in *The Fetal Tissue Issue: Medical and Ethical Aspects*, edited by Peter J. Cataldo and Albert S. Moraczewski (Braintree, MA: Pope John XXIII Center, 1994); Benedict M. Ashley and Kevin D. O’Rourke, *Ethics of Health Care: An Introductory Textbook*, (Washington, D.C.: Georgetown University Press, 1997), 149-151; Benedict M. Ashley and Kevin D. O’Rourke, *Health Care Ethics: A Theological Analysis*, 4<sup>th</sup> ed. (Washington, D.C.: Georgetown University Press, 1997), 227-49.

<sup>27</sup> *Critique of Delayed Animation*, 113

However, he believes that “if the philosophical principles of Aquinas are correctly applied to the data of modern embryology, the theory of delayed hominization turns out to be quite implausible.”<sup>28</sup>

Ashley makes the case that Donceel and others holding a delayed animation view within a Thomist metaphysical framework have incorrectly understood the degree to which the body and organs must be developed for the rational soul to be able to unite with it. Further, Ashley believes that Donceel has not correctly understood the role of the efficient cause in the embryo and in Thomas’ Aristotelian philosophy of nature in general. Donceel criticized the theory of immediate animation because he believed it necessitated treating the soul as the thing which, residing in a body manifestly incommensurate with itself, must *make* the body of the embryo into a truly human body fitted with the appropriate organs. With this criticism in mind, Ashley notes that

The basic axiom of Aristotle’s philosophy of nature is that “whatever is moved is moved by another.” At first sight the living organism seems to defy this law, because a living thing is precisely a substance which is self-moving, self-developing, self-reproductive. This self-activity is the empirical evidence that a thing is alive and ensouled, since by “soul” we simply mean the form of a material thing that is self-active. The different species of living things are specified and recognized precisely by different kinds of such self-activity...<sup>29</sup>

There must be a way of accounting for the fact that organisms move themselves, especially given that such movement is proof that they are alive at all. Animals, especially, manifest this power, and it is by their ability to respond to stimulus in their environments by local movements that they are distinguished as animals, and it is because of this that the sensitive soul, especially of higher animals, is sometimes referred

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<sup>28</sup> *Ibid.*, 114.

<sup>29</sup> *Ibid.*, 116.

to as the *locomotive* soul. Thomas remarks that plants also move themselves in a way, in that they digest nutriment.<sup>30</sup>

Ashley explains how an organism may be said to move itself, without attributing to the soul an efficient causality:

The soul of a living thing, however, is its principle as a formal cause, not as an efficient cause. It is only by mediation of its parts, each informed by a vital “power” (which is to the part, as the soul is to the whole organism) that a living thing moves itself, one part moving another. Consequently, in every living being there must be parts, and these (unlike the parts of inanimate chemical substances) must be heterogeneous, at least to the extent that one part is active and the other passive, so that the organism can move itself with the active part used to move the passive part. This active part is the *primary* part; and the passive part is, at first, in the embryological development of the organism, undifferentiated. The organism develops *epigenetically* because of this original lack of differentiation...

It is necessary, however, that

from the beginning this primary part must exist not only as actually differentiated but must also be actively efficient (i.e. it must be not only in “first act” but also in “second act”) because it is the “prime mover” of the whole organic system, without which it could not be alive, nor develop to maturity. The organism is ensouled and alive at the instant when this primary part first appears and begins to act, and it dies when the primary part ceases to act and is destroyed.<sup>31</sup>

However, this primary part need not exist immediately in mature form. It is enough, Ashley argues, for it to be differentiated physically and functionally from the other parts of the organism. After all, Aristotle had seen for himself that the heart of a fertilized chicken egg begins as only a tiny pulsing red dot.<sup>32</sup> Moreover, Ashley argues that, this primary part, this first organ of a sensitive life, is not only “the agent which causes the formation of all the other parts of the organism, it also constructs itself.” That is, the heart not only brings the other parts of the embryo into actuality, but also develops itself into the mature heart appropriate to the mature body of a chicken. “Thus the primary organ is

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<sup>30</sup> *Summa Theologica* I.78.1.

<sup>31</sup> *Critique of Delayed Animation*, 116.

<sup>32</sup> *History of Animals* VI.3.561a10.

first present in very simple form and as it constructs the total organism, it also constructs itself in mature form.”<sup>33</sup>

A word of caution is in order, here. The traditional interpretation of Aristotle’s view, at least on the part of the Thomist scholars who write about the embryo, is that the semen imparts movement to the embryo, and it is this motion which sets in motion the changes within the embryo. The first change is the development of the heart. “Now the parts of the embryo already exist potentially in the material, and so when once the principle of movement has been imparted to them they develop in a chain one after another, as in the case of the automatic puppets.”<sup>34</sup> In this view, while the embryo is in fact alive, it only *seems* that the formation of its parts is due to an intrinsic cause. Instead, the cause is technically extrinsic: the motion of the semen sets off a sort of chain reaction within the embryo. The heart does not, in this case, fashion the other organs. It is merely the first to be actuated by the movement of the semen. Ashley acknowledges and does not dispute this interpretation, but instead reimagines the role Aristotle assigned to the semen in light of modern embryology, making it possible for him to speak of this principle of movement as belonging intrinsically to the zygote rather than continually imparted by ongoing contact of the semen with the embryo. Thomas’ concern with regard to ascribing a formative power to the semen comes at least partly out of his care to show that the embryo, while shaped by the agency of the father as working through the formative power of the semen as his tool, does not have the father’s soul, but its own soul. Moreover, he wishes to establish that, since the rational soul is incommensurate with matter and beyond the ontological reach of a material power, the rational soul, unlike the

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<sup>33</sup> *Critique of Delayed Animation*, 116

<sup>34</sup> *Generation of Animals* II.5.741b6-9.



nutritive or sensitive soul, cannot be “educated” from the matter, but must be directly created by God. Because Ashley updates Thomas’ embryology by substituting the zygote’s own DNA and nucleus for the father’s seminal power, there is no similar concern that the embryo can be alive with his father’s – or his mother’s – soul.

### **Then and Now, the Science of Efficient Cause**

Ashley is convinced that the role of the efficient cause is *the* question that concerns Thomas, given his insistence that the rational soul as a spiritual substance must be created by God and not the father, yet original sin and human nature are transmitted by the parents. The father, who plays the active part, must work in the mother’s womb to develop her menstrual blood, which is a passive role for her, according to Aristotle. Since the father cannot directly make contact with that substance to direct its development, it is necessary that the father’s sperm, which does come into direct contact with the blood, have the ability to do so, as a sort of proxy. This power is not a soul, but it

had a high degree of the quality of “heat” and its proper efficient action was to act on the menstrual blood and refine it, just as it was thought that the heat of the body could digest nutritional material. As such, its action was purely chemical, and not strictly vital. However, as an instrument of the male parent, this spirit had been modified in the parent’s body so as to have a much more specific efficiency by which it was capable of forming the menstrual blood to the specific neutral temperament required for the human body...constitut[ing] it a vital instrument, endowed with an intrinsic vital power.<sup>35</sup>

This power remains in the embryo, at work fashioning it, until the advent of the rational soul. Given Thomas’ Aristotelian understanding of instrumental causality, Ashley believes Thomas has to posit a force continually in physical contact with the embryo which directs its development to the point at which it can receive the rational soul, rather

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<sup>35</sup> *Critique of Delayed Animation*, 119.

than a force that is transferred from one object to the next at the point of contact, as in Newtonian physics.

Ashley delineates two possible Thomist views on efficient causality. The first employs an Aristotelian (and Thomist) understanding of the instrumental power of the semen, which must be in continual physical contact with the embryo through the course of being formed by the first two kinds of souls and which then dissipates when God gives the rational soul. This is the traditional interpretation of Thomas' embryology, and it is one disproved by modern advances in embryology. We now know that the sperm ceases to exist as sperm and instead becomes subsumed into the new life and does not remain separate from it, guiding it through successive stages. The second possibility depends upon a Newtonian understanding of force being transferred from the first object to the second on the point of contact. In this way the father's semen forms the vegetative embryo and its primary organ, transferring, as it were, its power of continual development to that embryo in its primary organ. The embryo then develops itself to the point at which it is fit for the rational soul.<sup>36</sup> Ashley believes this interpretation, though not what Thomas had actually envisioned given the embryological data available to him, is nevertheless quite consistent with his views on organ development and efficient causality in living beings.

Thus we can answer our initial question by saying that the human matter is sufficiently prepared for the human soul, when and only when the primary organ of the human body is actually present and *beginning* to perform its vital functions, but that (a) the other parts need not be differentiated; (b) the primary organ need be present only in primordial form; (c) it need only be functioning to bring about the embryological development of itself and the whole, while its ultimate highest and specifying functions may still be in abeyance, awaiting the various auxiliary organs necessary for such functioning. Finally, we must note that the primary organ, even when it is acting at this more primitive level of functioning, is still

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<sup>36</sup> *Ibid.*, 121.

acting specifically in a manner characteristic of the species of the organism, since, according to the Aristotelian dictum, “an activity is specified by its term”; hence, since the primary organ is at work building a chicken, a dog, or a human being, its functioning is already the activity of a chicken, dog, or human.<sup>37</sup>

Because there is epigenetic continuity between the primary organ of the vegetative phase of embryonic life and the primary organ of the sensitive phase of embryonic life, Ashley argues that there is no evidence of a substantial change between those two phases, and thus no need for a merely vegetative stage of embryonic development.<sup>38</sup> He goes further, asking whether there is any need for a developmental period marked by a sensitive soul. In his reading of Thomas, what makes the human body so well disposed to rationality is the high degree of neutrality of its sense organs, especially with regard to its sense of touch.<sup>39</sup> If the sensitive life of the early embryo necessitated a separate stage of development before the advent of the rational soul, that would be due to a lack of such an apparatus, the which serves as the difference between the human *as* animal and other species of animal life. But again, unless we are unwilling to grant that infants and young children are not human beings – and Donceel is not willing to do so – Ashley points out that we cannot hold out for the complete development and mature efficacy of the primary organ of human functioning, but rather measure by its first appearance. What we are looking for is “the primordium of the specifically human capacity for the highest degree of sensitive life.”<sup>40</sup> In this case, Ashley believes that the first appearance of what will be the highly developed system capable of taking in the sort of nuanced sensory data appropriate to rational thought is the

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<sup>37</sup> *Ibid.*, 117.

<sup>38</sup> “Epigenetic continuity” is Ashley’s phrase to express the idea that the one is continually growing into and becoming the other; here he points to the continuity between the zygote of the blastocyst and the primitive streak of the embryo.

<sup>39</sup> *Ibid.*, 125.

<sup>40</sup> *Ibid.*

zygotic nucleus, because it is in this nucleus that we first see the “central organ maintaining life and producing development and differentiation” and this central organ continues to perform those same functions through each subtle advancement of the embryonic body and of its own organization and powers.

Given this very different estimation of the level of development necessary before animation, he argues, contra Donceel, that the matter is sufficiently prepared, not when the primitive streak appears, but at the close of fertilization when the nucleus of the zygote contains both

all the information (order, formal cause) and the inherent developmental power (efficient cause) to construct the human nervous system...The nucleus is the primary organ of a total organism which develops epigenetically, each part of the system reacting on the others at every point of development and maturity...an existential and dynamic continuity can be traced from the nucleus of the zygote to the cortex of the human infant.<sup>41</sup>

Additionally, given that Thomas was uninformed as to the level of organization of the maternal contribution—the menstrual blood was, developmentally speaking, relatively far from the vegetative embryo, whereas Ashley characterizes the maternal egg as being already well disposed—we should not expect it to take as long for the vegetative embryo to become the sensitive, and finally the rationally ensouled embryo. In fact, he finds no biological data indicating the need for a vegetative stage. Finally, given that the sperm does not remain separate within the embryo but becomes fused with the egg to form it, the power Thomas ascribes to the semen becomes already from its inception a part of the embryo. It directs its own development with this power. The sperm “initiates the process of fusion” but in this embryologically updated view, it does not remain separate, directing the ongoing development through all embryonic stages. It is the efficient cause of the

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<sup>41</sup> *Ibid.*

zygote only; “there is *no efficient cause for the rest of the embryological process*.”<sup>42</sup> Yet it is evident that the embryo continues to develop. Because the first option, Aristotelian instrumental causality, leaves us at an impasse here, Ashley explores the second, Newtonian physics, positing that the instrumental power of the sperm is transferred to the primary organ of the zygote: its nucleus. It directs its own development, then, as one part to other parts, since “nothing can move itself.” “This nucleus, by its own inherent powers, is able to guide the vegetative life of the embryo not only as regards vegetative functions, but, by its additional instrumental power, it will eventually be able to transform the vegetative embryo into an animal embryo, with some primary organ which (in addition to its own proper power of directing sensitive life) will receive the instrumental power to pave the way for the creative action of God.”<sup>43</sup> This is Ashley’s answer to those who have argued that the only way to hold an immediate animation view is to confuse efficient causality with formal causality. In fact, he critiques Donceel and others who he believes have not sufficiently answered how it is that the embryo undergoes such stages and such transformations, if there is no seminal power remaining in contact with the embryo to power and direct its changes. What other efficient power do they substitute, if they insist that such power cannot lie in the embryo itself?

Why then does Thomas think it takes the embryo forty days to develop such a primary part? Ashley’s answer is intriguing. He thinks it was easy for the saint to explain miraculous conceptions in which God’s Holy Spirit instantly disposes the matter so that the embryo is immediately rationally ensouled. In those rare cases, the immense power of God quite quickly does the work that it would take the very limited power in the father’s

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<sup>42</sup> *Ibid.*, 122. Emphasis in original.

<sup>43</sup> *Ibid.*, 122-23.

semen a long forty days: “the efficient cause has the task of raising non-living material to the very high state of organization required to be suitable for the human body.”<sup>44</sup> This high state of organization, he further specifies, has less to do with completed organs and more to do with the way that Thomas thought the body’s sense organs functioned with regard to the sensed world. The sense organs had to be “tempered”, that is, had to be “neutral to all the contrary qualities found in sensible objects, since if it were colored red, it could not be sensitive to green, or if it were hot, it could not be sensitive to cold, or if hard, to softness.”<sup>45</sup>

In conclusion, because the zygote has both complete information regarding the development of the embryo and manifests the power to enact it, Ashley argues that Thomas’ description of successive forms in the early embryo is “uneconomical and empirically unverifiable,”<sup>46</sup> and prefers instead to retain Thomas’ benchmarks for rational ensoulment of the embryo and locate them at the close of the fertilization process. By contrast, “[w]e can only conclude that according to present biological knowledge, theories of delayed hominization lack any solid empirical evidence.”<sup>47</sup>

## Potentiality

The conflict between the claim that a rational soul requires a body with fully formed organs and the claim that it only requires the primordium of one organ is often played out within the framework of *potency*. Potency is a metaphysical concept that both Aristotle and Thomas use extensively when they wish to speak of being that is not yet in

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<sup>44</sup> *Ibid.*, 118. The material referred to here is the mother’s menstrual blood.

<sup>45</sup> *Ibid.*

<sup>46</sup> *Ibid.*, 125.

<sup>47</sup> *Ibid.*, 128.

act in one way or another, but may become so, or perhaps already is becoming so. Though it seems that everyone who writes about the embryo has a different view of the potential of the embryo and what that means, it is possible to break down what distinctions ought to be made between different kinds of potency. Francis Wade does a particularly excellent job of enumerating and distinguishing between different kinds of potentiality in the Aristotelian tradition, and he does so in the context of the debate about the embryo. His article, "Potentiality in the Abortion Discussion" is a response to the idea that potency is really a matter of probability, and does not indicate anything about the subject which possesses the potential.

Potency may be either passive or active. *Passive potency* is about receptivity. It has an external cause, and the subject does not already possess the quality in question. Passive potency reveals something which *is not*, but *can become* so. However, this is not to say that there is not a specific relation of subject (as patient) to the quality induced in it. Wade remarks that

"[s]ince passive potency gets its meaning and intelligibility from what actualizes it, there is the temptation to say that it is nothing. It *is* nothing of actuality; yet it can be located in the data. Water has no passive potency for sun-tanning; man's skin has. That in the data is what is meant by passive potency: what the man's skin has and the water does not have."<sup>48</sup>

There is nothing about water which may respond to the sun by increasing pigmentation in the skin; it has no skin and no melanin. Therefore, passive potency is what may be, within the constraints of the subject's being. *Active potency*, on the other hand, has an internal cause. In this case, "it is not about what a being (patient) can receive but about what a being (agent) can do."<sup>49</sup> An agent differs from a patient in that it possesses

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<sup>48</sup> "Potentiality in the Abortion Discussion," *The Review of Metaphysics* 29.2 (1975), 240, footnote 3.

<sup>49</sup> *Ibid.*, 241.

tendencies. A tendency is the disposition towards an action, and tendencies come from the agent's nature. Tendencies are *dynamic*.<sup>50</sup> Tendency not only specifies what the agent might do, as opposed to the passive potency of what a subject may receive; it is a "thrust or drive towards action."<sup>51</sup>

Active potency may be either *natural* or what Wade calls *specifiable*. *Natural active potency* is "not a matter of promise only but of guarantee insofar as the agent is concerned."<sup>52</sup> It ensures that, unless positively prevented, the agent will act on that tendency. By way of contrast, if natural active potency is aimed at something specific, *active specifiable potency* is determined towards an unspecified end. The distinction rests on whether the action is restricted to one thing, (plants grow), or whether the action is a matter of opportunity (the fox eats rabbit because it was a rabbit it happened upon, and not a grouse) or of deliberation (the musician chose the flute rather than the double bass as the medium in which to develop her talents). "The most that can be said for specifiable potentialities is that they may or may not issue in action."<sup>53</sup> In other words, it could happen if the opportunity presents itself to the agent, but unlike with an active natural potency, the agent may not make that potency a reality, even then.

With regard to the embryo's relation to the adult it will become, Wade argues that "[t]he potentiality of the fetus to become an adult is not a passive potency, which is neutral to the future; nor a specifiable active potentiality, which is a very "iffy" promise; but is an active natural potentiality or tendency, which is a guarantee of the future as far

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<sup>50</sup> *Ibid.*, 242.

<sup>51</sup> *Ibid.*

<sup>52</sup> *Ibid.*, 244.

<sup>53</sup> *Ibid.*



as the agent is concerned.”<sup>54</sup> In fact, not only is the embryo unable to do otherwise, if it is prevented from acting on this dynamic orientation, if it is prevented from actualizing its potential, it dies. It cannot exist in any other fashion; and unless all of its activity is literally frozen, as in the case of storage for research or an *in vitro* procedure, it cannot continue any other activity if that particular activity is hindered. Thus, again, it ceases to exist at all. Because the embryo’s drive to become human is so important, and so intrinsic as to be basic to its existence, the obvious implication is that its potentiality reveals something about its actuality: it cannot be becoming human unless it is already human. Only human embryos can become human beings. This is obvious, but important. But there may be more to it: can the embryo be anything less than human if what it needs to manifest its humanity is already inside it and actively working to bring it about? And thus, the argument goes, we ought already to treat it with the respect due to human beings, because its very potentiality reveals human acting.

Eberl applies Wade’s definition of potentiality to the zygote’s relation to manifesting rational thought. He believes that the zygote has an active potentiality for rational thought because it already possesses what is necessary to develop a functioning cerebral cortex, and moreover, because it has a natural potentiality “to develop a capacity in hand for such operations.”<sup>55</sup> If the potentiality of the embryo to become the adult is best understood as a natural active potency, and the potentiality of the embryo to have rational thought is likewise a natural active potency, the other question that tends to arise in this context is the potentiality of the sperm or egg to the adult.

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<sup>54</sup> *Ibid.*, 245.

<sup>55</sup> Eberl, *Human Embryogenesis*, 387.

## Sperm as a Potential Person

Proponents of delayed animation sometimes conflate kinds of potency by appealing to the potency of sperm to personhood, in an attempt to disprove what has been called the *Argument from Potential* through a reductio ad absurdum. Regarding the argument that the embryo's potentiality to the human adult reveals its present ontological identity and value, Dombrowski and Deltete respond by saying that if "potentiality for X entitles one to X, then the silly line from a Monty Python film should be taken quite seriously: every sperm is sacred."<sup>56</sup> But this, especially from within a Thomist framework, is itself ridiculous. Sperm, it is true, is in potency to the embryo. So, also, is the food which is converted into sperm by a man's body. But as we have seen, there are many ways in which a potential may be related to an actual. The food ingested by a man has the passive potency to become semen. It is an entirely passive process; the most that can be said is that there is nothing about food that prevents it from being transformed by the man's body into sperm rather than into bone marrow, scar tissue, or a cancer. The man who ingests it has what Wade likes to call a specifiable active potency to sex, in which context his sperm may meet with and fertilize an egg. He is able to choose to have sex, or not, as he chooses and as the occasion provides. The sperm has a natural active potency to seek out an egg, and it will act on that tendency until it is successful, or more likely, until it dies. It cannot do anything else. One of the things it cannot do is to become a zygote. It has no natural active potency to become a zygote, no "promise as far as the agent is concerned," because sperm does not have within itself what is necessary to be a zygote with mere non-interference from its surroundings. It needs the opportunity (the specifiable active potency of the man to have sex) to meet the egg, the actual presence of

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<sup>56</sup> *Catholic Defense of Abortion*, 47.

the egg, and the potency of the egg to be fertilized, and only then, when fertilization commences within the egg, can there be said to be any natural active potential to become an embryo, yet this is not the potentiality of the sperm any longer, but the potentiality of the sperm and egg together as they combine to become a new kind of thing entirely. The sperm's potentiality to the embryo is passive and not active, because it "needs an external event which is going to change radically its identity and potentialities."<sup>57</sup> It is worth noting that not only is this argument invalid because of the general framework of Aristotelian and Thomist metaphysics, and the way they define different kinds of potentiality, but both philosophers analyze this particular application of potentiality. Aristotle sometimes writes of the sperm as potentially a man, or even earth as potentially a man.<sup>58</sup> But these are not natural active potencies. By this criteria, "seed is not yet potentially a man; for it must further undergo a change in a foreign medium."<sup>59</sup> Thomas Kjeller Johansen explains this line and the surrounding passage in a way that should endear him to those arguing for immediate animation:

In the case of the seed we say that it is in capacity [in potency to] a man if it itself is such as to become a man if nothing *external* hinders it...we think that the seed has a principle of coming into being in itself. Or rather the seed has this principle not at first on its own, but when it has been placed in another thing—presumably the female menstrual fluid—and there undergone a further change. Once the seed is changed in the female matter, it has within itself the motive principle, that is the efficient cause. From then on its development into a mature human being is a matter of nothing external interfering with it.<sup>60</sup>

If Aristotle is quite clear on how and in what way the sperm may be in potency to a human being, Thomas is equally able to distinguish different kinds of potentiality such that the sperm has no real proximate potency to personhood. Thomas scholar Francisco

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<sup>57</sup> Massimo Reichlin, "The Argument from Potential: A Reappraisal," *Bioethics* 11 (1997), 13.

<sup>58</sup> e.g. Aristotle, *Metaphysics* IX.7.1049a1.

<sup>59</sup> *Ibid.*, IX.7.1049a15.

<sup>60</sup> *The Powers of Aristotle's Soul*, (Oxford, U.K.: Oxford University Press, 2012), 141.

Amerini agrees that Thomas likewise distinguishes between the relation of sperm to soul, and the relation of embryo to soul.<sup>61</sup> Thomas paraphrases the same passage in Book IX of the *Metaphysics* this way: “However, seed is not such, for an animal must be produced from it through many changes; but when by its proper active principle, i.e., something in a state of actuality, it can already become such, it is then already in potency.” Thomas says of the seed that it cannot be made into what it will become “in one motion” but when it has been changed, when it is already in act, then it is already in potency.<sup>62</sup> It seems then that Johansen’s reading of Aristotle holds true also for Thomas: that the semen is not properly in potency to the soul, but the embryo, as already in act, is properly in potency to *what it already is*.

At the very least, whether one holds a delayed animation view or an immediate animation view, it is clear that the sperm’s potential to be human is nothing like the embryo’s potential.

We know neither [egg nor sperm] is an actual person, but through the process of successful fertilization, both together may give rise to an actual person, immediately, or after some development. This is all that can be meant by referring to one or the other as a potential person – indeed, merely a remotely potential person. In the natural state and in the absence of fertilization, neither taken separately nor jointly do they have any inherent active potential to form a person. This is a crucial difference.<sup>63</sup>

Those on both sides of the debate who wish to employ Aristotelian and Thomist concepts of potentiality must agree that neither sperm nor egg is a potential person.

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<sup>61</sup> Amerini, *Beginning and End of Human Life*, 169.

<sup>62</sup> *Commentary on the Metaphysics of Aristotle*, IX.6.1837.

<sup>63</sup> Ford, *When Did I Begin?*, 97.

### Potency v. Possibility v. Probability

In addition to the popular example of a sperm as potentially a person, a number of other common figures are often employed. One such example which has become a fixture in the debate is that of a child who will grow up to become the president.<sup>64</sup> Before he actually becomes president, he cannot exercise the authority of the office, nor does the Marine Corps band play “Hail to the Chief” when he enters his mother’s kitchen to eat dinner.<sup>65</sup> And yet, it is still true that he will one day become president. This example purports to show that, in a similar fashion, the mere fact that the embryo will one day become the adult human being cannot demonstrate that it ought to be treated as that adult already. This example, too, crumples when analyzed in terms of different kinds of potentiality. We may expect that the child who will become president will be motivated by an internal agency, so his potential to the presidency will in that eventuality be active. But there is nothing about the child which necessitates that he grow up to become president, nothing inherent in him which works tirelessly toward that end and no other. The child could grown up to be any number of things given his talents and opportunities: it just so happens that he does, in fact, grow up to be president. It is not the single possible mode of existence open to him. Therefore, his potentiality to his future is, at that point, only a specifiable active potency, and not a natural active potency, as is the case for the embryo. Massimo Reichlin argues that this example lacks inherent teleology: “on

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<sup>64</sup> Joel Feinberg sketches an example in which Jimmy Carter at six years old didn’t know he was a “potential” president, and at that point, had no claim to exercise the authority of the office. “Potentiality, Development, and Rights,” in J. Feinberg (ed.) *The Problem of Abortion*, (Belmont, CA: Wadsworth, 1984), 147-148.

<sup>65</sup> Dombrowski and Deltete also employ Feinberg’s example: “Potentiality arguments lead to absurdities in their own right. If one is potentially the president of the United States one should, on the grounds of the potentiality argument, expect “Hail to the Chief” to be played when one enters the room.” They also ask readers to find it ridiculous to treat the embryo as a person because one does not call a father of mature children *Grandpa* in expectation that he most likely will be one soon. *Defense of Abortion*, 47.

this account, being potential does not mean any thing more than being possible,” whereas potentiality really indicates “the kind of necessity shown by a natural development.”<sup>66</sup>

This example and that of sperm reveal how potentiality is often taken to mean no more than *possibility*, or even statistical *likelihood*, as if potentiality only reveals possibility and not actuality. For instance, when Richard McCormick writes about the zygote, he acknowledges that it is a new individual with the potential to become an adult human being, but that potential “is a theoretical and statistical potential because only a small minority actually achieve this in the natural process.”<sup>67</sup> Regarding those who think of the sperm and the embryo as potentially human because of the chance that at some point, they may develop into an adult human being, Reichlin argues that the word they are looking for is not *potentiality* but *possibility*, because they take potentiality to mean “equal to the mere idea of non-contradiction of a certain development.”<sup>68</sup> Given a universe in which matter is conserved, by this rubric anything is potentially anything else, at some remove. Others go so far as to lay odds, and make a crucial category mistake when they attempt to quantify the embryo’s present ontology in terms of its chances of surviving to a particular point of maturity. Hugo Engelhardt believes that all the talk of potentiality is entirely misleading:

It is perhaps better to speak not of *X*’s being a potential *Y* but rather of its having a certain probability of developing into *Y*. One can then assign a probability value to that outcome. Recent research concerning zygotes suggests that there is a great amount of zygote wastage. Since only 40-50 percent of zygotes survive to be persons (i.e., adult, competent human beings), it might be best to speak of human zygotes as 0.4 probable persons.<sup>69</sup>

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<sup>66</sup> *Argument from Potential*, 6.

<sup>67</sup> McCormick, *Preembryo*, 3.

<sup>68</sup> *Argument from Potential*, 4.

<sup>69</sup> Hugo T. Engelhardt Jr., *The Foundations of Bioethics*, (New York: Oxford University Press 1986), 111. In the second edition of the work, Engelhardt revises this statement by removing the crassness of actually assigning a specific number to the zygote, though he retains his claim that such a calculus is an appropriate

In his view, that the embryo is potentially human only means that the embryo is as much a person as its odds for achieving maturity allow it to be.

### Mediate Conclusions

The fundamental disagreement between Donceel and Ashley, and between the delayed animation position and the immediate animation position more generally, is in regard to which kinds of development are a matter of substantial change, and which kinds are a manifestation of a subject as perfecting its matter in light of the end.<sup>70</sup> This is also what is behind the tug-of-war over the meaning of potentiality as applied to the embryo, in that the argument from potential depends upon viewing the embryo as an agent which develops itself from within. Though for Thomas, “no substantial form is subject to increase and decrease,” the matter which is formed may be more perfectly disposed to manifesting its powers, which is another sort of perfection.<sup>71</sup> It seems that Donceel thinks of animation as the period of relative plateau after development has taken place, and Ashley believes that epigenetic change is *not* generation, that is, not a change in substance, and is possible in and by the embryo from its inception, because of its organization and its already evident differentiation.

According to Aristotle, a being cannot generate itself.<sup>72</sup> Generation is the power of an animate being to make another being, like itself, that is a numerically *different* self.

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lens, and he does so immediately after invoking Thomas Aquinas’ authority on viewing abortion as sin but not homicide. *The Foundations of Bioethics*, 2nd edition (New York: Oxford University Press, 1996), 142.

<sup>70</sup> Robert Pasnau, because of his views on the embryo, is forced to explain the caterpillar and the butterfly as two different beings: the caterpillar must stop existing when the butterfly begins to exist. The life cycles of all such animals, in this view, are not life cycles, but inexplicable series of distinct beings. *Human Nature*, 125.

<sup>71</sup> *On the Power of God* 3.9.

<sup>72</sup> *On the Soul* II.4.416b16. See also Thomas Aquinas, *Summa Theologica* I.78.2.

In an immediate animation view influenced by modern biological data, the parents generate the zygote, at least as to its body. Something truly new has come into being. It is not an extension of either parent, for its organization is a completely new integration of parts of each of them. Even if the parents have had other children, this zygote is different and unique from its siblings. It has a human nature because it was formed by the parents as working through the actions of their gametes in the process of fertilization, and this action produced a body perfectly disposed to receive from God the rational soul immediately upon being formed. The egg and sperm are the human material, and are perfectly disposed to the generation of a human body. Moreover, they both have within them a certain power to make the human body out of their own material. The zygote is not a homogenous mass, but already heterogenous within its own body, even as a single cell. It has a human body because of the activity of its parents through their gametes. That is, it is already really (and not virtually) organized, and in addition, it is configured in such a way that it can develop itself to its full potential with appropriate support, as a matter of real development and not as a matter of substantial change.

This last distinction should be even less difficult for us moderns to parse than it might have been for Thomas, in that we are aware of the many, many real changes and developments that occur in the time bridging infancy and adulthood. The infant in many ways is *not* a man writ small, with adulthood at the other end of a process of simple growth. There is room within a Thomist framework to speak of a body as needing more than simple growth to reach maturity, and likewise for identifying the organism itself, through the powers of its soul, as responsible for that development.<sup>73</sup> Certainly, even plants do this: the “organ” necessary for nutritive life is a very simple formation which

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<sup>73</sup> This assertion will be further developed and defended in later chapters.



can bring nutrients from the soil into the plant, and distribute it within the plant. But this is not all that plants do. They grow larger, true. But that is simple growth, the changing of nutrition into additional mass. Plants also grow new shapes and even entirely new parts: branches, leaves, stamen, petals, seed pods: any number of really different, new parts. These parts do not already exist within the immature but animate seedling, awaiting only growth, but rather have yet to be expressed physically, though the seedling is capable of such and will bring those parts into act in due time. If this simple observation regarding the way plants develop were contrary to Aristotle's maxim that nothing generates itself, we would be forced to conclude that the eminent naturalist were a fraud. For what could be more obvious than that plants not only grow but continue to develop? Development, therefore, cannot be generation. That the embryo further develops after receiving the rational soul is no challenge to the continuity of its substance, no matter when it receives the rational soul. Donceel, Pasnau, and others claim that Thomas would only be willing to identify a body with 'actual' rather than 'virtual' organs as minimally disposed to receive the rational soul, by which I take them to mean organs comparable to those found in the mature human body. On closer examination, this is more tenuous than they realize, for Thomas and Aristotle were both aware that there is a difference between the organization of the body of a mature being as contrasted with that same being at an earlier, immature stage, though there are confusing ambiguities in the text. Put simply, they are both aware of development, and do seem not feel that the substance of the subject is thereby threatened, even though they also indicate that there is no perfection of a form, only of matter. One cannot become *more* of a human. Either one is or one is not.

This does not yet allow us to say anything positively on Thomas' behalf regarding views he actually held on the embryo, but we may say that, if only he and Aristotle had known that the embryo is responsible for its own growth and development, and not the father as working through the semen, it is not impossible that he could have set aside the necessity of positing successive forms in the embryo before the rational soul. That question aside, we have established that this tension between two kinds of efficient causes is central to the debate. While a number of tantalizing possibilities have opened, none enable us to say that Thomas actually believed anything else of the embryo other than that it was not yet sufficiently developed to receive the rational soul upon coming into existence. Immediate animation claims offer a consistent and illuminating perspective on the embryo, particularly with regard to its potentiality, which may be very helpful in modern ethical contexts, but they do not further illumine Thomas' views. Rather the opposite: by raising possibilities which are not possibilities for Thomas, one cannot help but notice ambiguities and problems within Thomas' own account which make it more difficult rather than less difficult to say with any precision what he thought about the embryo.

“...material things, though the least of beings, clamor the loudest for an explanation.”  
 -James McWilliams<sup>1</sup>

## Chapter 5: “X” Marks the Spot

It seems, then, that we can say very little about the embryo, or at least, while we have said a great deal about it, it is less clear rather than more clear what Thomas himself might have held regarding what kind of *being* it has. Chapter 2 showed the difficulties of imagining the embryo as simply some sort of a plant or animal in a scheme of successive renovations preparing the body for the rational soul, a sort of evolution writ small in preparation for *homo sapiens*. The general argument put forth by de Dorlodot, Messenger, and others poses any number of challenges to Thomas’ metaphysics and to sense. Chapter 3 raised the prior question of whether the embryo can be understood as *one* of any kind of thing at all. Neither the data nor Thomas’ embryology allow the alternatives: that it is a part of the mother’s body, or that it is some aggregate or colony of individuals existing in forced proximity to one another. Chapter 4 brings into sharp contrast with Aristotelian embryology the more current data showing the embryo as organized from the beginning and self-directed in its rapid changes. While this view of the embryo may explain how it does, in fact, develop itself, it cannot show us what Thomas thinks of the embryo from the standpoint of the embryology actually at his disposal. Against this backdrop, we turn to the most recent and thorough work on Thomas’ embryology, a book entitled *Aquinas on the Beginning and End of Human Life*, by established Thomist scholar Fabrizio Amerini. As ever, the goal is to identify what Thomas held or could have held regarding the being of the embryo.

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<sup>1</sup> James A. McWilliams, S.J., *Physics and Philosophy*, (Washington D.C.: The American Catholic Philosophical Association, 1946), 26.

Though Amerini attempts to find new middle ground for the debate, in many ways, albeit with unsurpassed attention to obscure texts and to myriad nuances and possible interpretations, he gives a relatively traditional interpretation of Thomas on the embryo, with a number of unusual and considerably narrower constraints. He begins at the accepted starting point for the debate: the timing of ensoulment, “[s]ince the possibility of defining a body as human depends on the rational ensoulment of that body, determining when the rational soul arrives is equivalent to determining when human life begins”, and from there, attacks the problem of the embryo on two fronts: 1.) the identity of the embryo and 2.) the continuity of the embryo.<sup>2</sup>

Amerini wrestles back and forth with a number of possible ways of describing the identity and continuity of the embryo.<sup>3</sup> Regardless of further difficulties (and he delineates many), he is sure about this at least: that there must be *something* which is being generated, and that something which is being generated is, in that way, one subject. The embryo may therefore be identified as the subject of the process of generation; moreover, he believes it must be understood as “the *same* embryo that undergoes the progressive substitution of forms, reentering into different species and living different lives.”<sup>4</sup>

The embryo does not possess a form that it maintains for the entire process and for the whole duration of the process and so the embryo does not possess an identity that is given once and for all. Its identity can only be established diachronically, by reflecting on the fact that it is the subject of one and *the same* process that in its turn is, therefore, a process that concerns one and *the same*

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<sup>2</sup> *Beginning and End*, 56

<sup>3</sup> Amerini delineates quite a number of possible problems and possible solutions regarding the embryo, and perhaps no one else has gone to such lengths to examine each facet of Thomas’ embryology and its possible interpretations. To do more than hint here at his nuanced and varied points would be to choose to quote the whole work in its entirety.

<sup>4</sup> *Ibid.*, 164.

subject. Since the process in its entirety is uninterrupted and temporally indivisible, even if characterized by an alternation of generations and corruptions, the presupposed identity of the subject allows us to develop a cognitive procedure that permits us, at every moment of that process, to establish the identity of the subject and to reconstruct its path. ... Thomas establishes a strict correlation between the identity of a movement and the identity of its subject: each can be inferred from the other.<sup>5</sup>

However, Amerini is quite clear that this identity is completely *extrinsic* in that the final end is only present when the generation is complete.<sup>6</sup>

[I]n the case of an embryo A and a human being B, substantial continuity tells us that A does not have its own being but is something in potency to being B, which expresses the authentic being of A...to be an embryo does not express the complete or perfect form of an embryo, but only expresses an incomplete or imperfect form of being a human being, which is the genuine form of the embryo. Hence, the being of A is exhausted in its being in potency to B, and being B expresses the perfect and complete being of A, a being that A does not yet possess, insofar as it is A, except in an imperfect and incomplete way.<sup>7</sup>

It is precisely the very incompleteness of the embryo which makes it possible for him to understand it as substantially continuous with the human being it is becoming.

Dissatisfied with a merely extrinsic identity, Amerini looks for a more intrinsic continuity, in either the form or the matter.

Early in the work, he describes a possible formal continuity in that, though the embryo passes through distinct successive formations, it nevertheless retains certain vital functions which are continued in their operation by the next form, which always not only replace but, as he has it, *reabsorbs* the powers and functions of the previous form.<sup>8</sup>

Additionally, the presence of the seminal power may perhaps function as a formal

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<sup>5</sup> *Ibid.*, 165.

<sup>6</sup> *Ibid.*, 110.

<sup>7</sup> *Ibid.*, 117.

<sup>8</sup> *Ibid.*, 111. Though I remain unconvinced regarding the extent to which he pushes Thomas' description of the way in which higher souls virtually contain lower, the point is well taken.

continuity in the embryo, bridging the succession of forms.<sup>9</sup> There is also a kind of material continuity.<sup>10</sup> This material continuity lies in the mother's menstrual blood, because what is generated is generated from her blood, perhaps in a way analogous to the way a sculptor works in bronze to make a statue.<sup>11</sup>

Amerini has a rather interesting take on the unity of the embryo with the human being it will become: it waxes with the increasing proximity of the embryo to rational ensoulment.

Rather than being fixed and determined once and for all, the unity between an embryo and a human being turns out to be, after all, variable and gradual. As the process is realized, the degree of unity becomes continually less generic and continually more specific... The unity of matter between an embryo and a human being is conditioned by the same gradualness. The embryo just conceived does not have a properly human matter, since the embryonic matter is nothing but human matter in a yet incomplete and imperfect form. As the embryo is perfected, however, the embryonic matter becomes an ever more human matter, until the embryonic matter and the matter of a human being fully coincide. In this way, the unity between an embryo and a human being passes from partial to total, from indeterminate to determinate.<sup>12</sup>

He thinks of the continuity of the embryo, its matter and its forms, in terms of "generic functions that gradually become more specific" until they are perfectly consonant with the rationally ensouled, and thus human, being.<sup>13</sup>

As compelling as this rationale is, Amerini goes on to consider whether the way Thomas speaks of the process of dying, and specifically of the differences between the rationally ensouled body and the body immediately upon separation from the soul, may

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<sup>9</sup> This is still problematic, however, because of the ambivalence with which Thomas treats the role, scope, and duration of the seminal power in the embryo. The extent to which the semen can be either formal or intrinsic to the embryo is also debatable.

<sup>10</sup> Though he does not admit that for Thomas the embryo can be said to *be*, as such, nor, as a result, *to be one*. In fact, "if the embryo cannot be counted as one, it can neither be said to be numerically identical to or numerically different from the human being to which the embryo will give[sic] rise." *Ibid.*, 115.

<sup>11</sup> Amerini does not make this analogy, though I hope it illustrates his meaning in making this point about the mother's menstrual blood as the material form of the embryo.

<sup>12</sup> *Ibid.*, 120-21.

<sup>13</sup> *Ibid.*, 121.

negate this tantalizing possibility, and thus the opportunity to speak of the embryo and the human being as either generically (with regard to vital functions) or numerically the same.<sup>14</sup> Amerini's point is that for Thomas, there is a distinction between the vital functions observable in the body immediately after the separation of the soul and the vital functions performed by the human being before death. In other words, there is not only a numerical distinction between the identity of the rationally ensouled human body and the dying body bereft of soul. It is also true that in some way the working of the lungs in the expiring body and the working of the lungs in the previously healthy rationally ensouled body are numerically distinct. There is no numerical identity between either the bodies or the functioning of the bodies. Amerini believes that this nullifies the possibility of identifying a continuity of vital functions between the embryo and the human being, because they, like the live body and the corpse, have different forms.

This reserves only the extrinsic, teleological continuity he has already established. Amerini thinks it proper to speak of the embryo and the human being as the same only with regard to potency and act, in his view a not very robust relation as it is metaphysical and not biological; it can be deduced but not demonstrated.<sup>15</sup> "Potency and act...require one and the same subject simply because it is presupposed that what is in potency is the same as what is in act. Such seems to be, in the end, the only unity or identity that can be acknowledged between an embryo and a human being."<sup>16</sup>

In such a way, his earlier optimism regarding the identity and continuity of the embryo is gradually constrained. After a long process of outlining promising ways of

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<sup>14</sup> *Ibid.*, 121-22. He cites texts such as *ST I-II.67.5*, and *On the Power of God* 8.4.5.

<sup>15</sup> *Ibid.*, 123.

<sup>16</sup> *Ibid.*, 123-24.

describing the identity and continuity of the embryo only to discard them as too problematic, Amerini comes to the conclusion that

Thomas Aquinas seems to accord to the embryo a transtemporal identity as subject of the process of generation, even if he has significant difficulties in stating precisely what type of identity holds between an embryo and a human being... While the human being to be generated is the final end of the process, the embryo is the subject of that process and is what gives real continuity to the process leading from prime matter to the human being. The embryo is the authentic subject of the process of generation, and it is the embryo that is in potency to the form of human being. In particular, it is the *same* embryo that undergoes the progressive substitution of forms, reentering into different species and living different lives. If the vital functions exercised by the embryo cannot be considered as numerically identical to the functions exercised by the human being, they nevertheless are the same functions because they are functions of one and the same subject. Hence, the embryo and the human being to which it will give rise can be considered the same subject.<sup>17</sup>

Yet even this is not his final word on the subject. With regard to the embryo Amerini makes a distinction between being human and being a human being, which in itself is quite common to the debate. The human embryo has what he describes as a “significant relation” to the form of human being—not just any kind of embryo can become one—and he attests that “[o]n Thomas’s account of human generation, one can say that an embryo is human, but not that it is a human being except potentially.”<sup>18</sup> Just when things seem settled and it seems possible to establish the embryo as human if not a human being, he asserts that, in fact, for Thomas the term “human” cannot be properly applied to the embryo, because it is not yet a human being. His earlier conclusion is invalidated by the fact that the embryo lacks a rational soul. “In reality, it is hard to misunderstand Thomas in his holding that the embryonic matter and form are not yet human but are only a *disposition* for human matter and form.”<sup>19</sup> Yet in the same paragraph he seems to affirm

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<sup>17</sup> *Ibid.*, 165. Emphasis original.

<sup>18</sup> *Ibid.*, 166

<sup>19</sup> *Ibid.*, 170.



both that “one can safely say that for Thomas an embryo can be described as something that right from its conception is ‘in the process of becoming a human being’” and yet also that

...in light of the detailed clarifications that Thomas introduces, I maintain that an embryo ought more properly be described as something that is in the process of becoming a human being but is not yet a human being, rather than be described as something that already is a human being and is being perfected and completed.<sup>20</sup>

That is, Amerini both reads Thomas as holding that the embryo is positively understood as becoming a human being, and at the same time himself modifies this view, insisting that the proper context for understanding that view is a negative assessment of the embryo’s being. It is more important to stress that the embryo is not yet a human being than that it is becoming so. “It is only as existing within the process of generation that the embryo assumes a ‘human’ identity, an identity that it maintains as long as a true and proper human being is not formed.”<sup>21</sup>

The embryo, as such and in itself, is not included in the human species.<sup>22</sup> This contrast might be shown in the gulf between describing the embryo’s being as *not yet a human being*, rather than *becoming a human being*. For Amerini, the embryo is included within the species by reduction, but just as he sees the final end as a purely external cause of the embryo, so also the reduction to species is purely negative and does not give the embryo any real being: if its process of generation stops at any point before the advent of the rational soul, it never has been human, because it is no longer becoming so. The human that would have been generated never comes into existence, and therefore the embryo which had been becoming that *human being* cannot be understood as having been

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<sup>20</sup> *Ibid.*, 175

<sup>21</sup> *Ibid.*, 178.

<sup>22</sup> *Ibid.*, 177.

*human* in any meaningful way. “If for some reason the process of generating a human being were interrupted, one would find something that is lacking the species of human being, something that is no longer human and not yet a human being.”<sup>23</sup> The embryo, as the subject of generation, is not in itself absolute nonbeing, however: “the embryo possesses a certain degree of being, insofar as it is endowed with a form that renders it in potency to its being a human being, but it also has an absolute form of nonbeing as regards its being a human being.”<sup>24</sup>

In a concluding section of the book, Amerini critiques attempts to resituate Thomas’ philosophical insights regarding the embryo’s development within the context of modern, more accurate scientific data. “Leaving aside the advisability of revising for one reason or another what Thomas actually held, it seems to me that this attempt at reconciliation should be rejected philosophically.”<sup>25</sup> He identifies two reasons for this assessment: 1.) Thomas considers other perspectives on the timing of rational ensoulment only to dismiss them on philosophical grounds and 2.) more importantly, a deeper scientific knowledge of the physical development of the embryo can in no way explain or further illuminate the origin of the rational soul and thus the human being, for

[i]f being a human being depends on having a soul infused by God, the presence of the genetic codes in the zygote does not prove or help to prove that the zygote has the property of “being a human being,” for otherwise the infusion of the soul would play no role in identifying the embryo as a human being.<sup>26</sup>

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<sup>23</sup> *Ibid.*, 178.

<sup>24</sup> *Ibid.*, 180.

<sup>25</sup> *Ibid.*, 215.

<sup>26</sup> *Ibid.*, 217. Regarding Amerini’s first reason, we should note that the biology involved is not unimportant to Thomas’ reasoning, and serves to inform his philosophy. Additionally, Amerini here makes the argument that Thomas’ decision in choosing one embryology over another is also a decision to keep philosophical and scientific analysis separate. Though Thomas is certainly no gifted naturalist, I disagree with the inference that he would thereby reject the opportunity to consider philosophical insights gleaned from advancements in science, were he in fact to be presented with such.

Here his point is straightforward: if the embryo, by having within it the complement of genes unique to it, is thereby a human being, what need is there of the rational soul? I sympathize with his impatience regarding any attempt to change Thomas' mind posthumously by updating his knowledge of biology, but I cannot dismiss the intellectual worth of the exercise, simply because it begins with a "what if" intervention in time. Amerini's project simply serves a different purpose and answers a different set of questions. Moreover, I do not share his assessment of Thomas' embryology as simply metaphysical and not biological or scientific. He is no great naturalist like Aristotle or even his mentor, Albert the Great, but for him the physical realm is always intelligible. I agree rather with Philip Smith, who wrote that "[t]he 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 beginning of personhood."<sup>27</sup> The great draw of Aristotelian philosophy is the way he encourages us to expect to find "gods in the kitchen." That is, every aspect of the natural world "will reveal to us something natural and something beautiful. Absence of haphazard and conduciveness of everything to an end are to be found in nature's works in the highest degree."<sup>28</sup> The embryo is no exception. Like Aristotle, Thomas also was "interested in metaphysical principles not so much in themselves but rather as proper explanations of the facts of the world."<sup>29</sup>

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<sup>27</sup> Philip A. Smith, "The Beginning of Personhood: A Thomistic Perspective," *Laval théologique et philosophique*, 39.2 (1983), 197-98. Here Smith refers to Thomas' *Commentary on the Nicomachean Ethics*, Bk. 1, Lecture 1.

<sup>28</sup> Aristotle, *Parts of Animals* I 5, 645a17-24. Thomas cannot have known and loved and written about Aristotle's philosophy so well if he had not felt similarly about the world. Indeed, there is an added layer for Thomas: as a Christian, he finds the order in the natural world positively eloquent about its Creator.

<sup>29</sup> Heaney, *Rational Soul in the Early Embryo*, 31.

Amerini's concern that any attempt to identify the embryo as human before the rational soul threatens to treat the rational soul as peripheral is well taken, however, and I hope will be substantially addressed in later sections. This is of course the crux of the problem: how can the human embryo be understood as human in any meaningful way before it has the substantial form that gives it its species as human?

Of particular importance to the present work is Amerini's remark that "the embryological account of Thomas Aquinas balances certain theses that in our view appear to be in tension. Probably Thomas did not see things this way and had no difficulty in reconciling the identity of the embryo over time with the discontinuity of the generative process; philosophically, this point is not even particularly troublesome for him."<sup>30</sup> Amerini comes by a laborious, deeply scholarly route, to a very limited conclusion about the embryo and its identity and continuity. In fact, his is perhaps the most narrow interpretation of Thomas on the embryo in the secondary literature. In contrast to his own view, he suggests that Thomas himself seems to have had little difficulty viewing the embryo as one subject. "The identity of the subject of the generative process is, in the end, presupposed by Thomas and this depends on the fact that in general the notion of identity seems to be for Thomas a primitive notion, not explainable by more fundamental notions."<sup>31</sup>

Though his main focus is on the interplay of Thomas' texts, Amerini does spend a little energy considering the trends in the embryo debate. He disagrees with the idea that one can know the timing of rational ensoulment from the material processes or state of development of the embryo, and argues that to approach the question through scientific

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<sup>30</sup> *Ibid.*, 227.

<sup>31</sup> *Ibid.*, 116-17.

observation of the embryo is to “reverse the explanatory relation that for Thomas holds between matter and form.”<sup>32</sup> The proper way to do it, he believes, is to begin with the metaphysical principle, ascertain what is necessary by way of the material, and only then attempt to identify when it is possible for the material to be well-enough disposed so as to receive the rational soul. He has what seems to me to be an unwarranted concern that attention to the data *means* an attempt to explain the soul itself in material terms.

In his consideration of the current state of the discussion on the embryo, Amerini seems to blur certain aspects of the arguments generally put forward by proponents of immediate hominization. For instance, he describes the rational soul coming at the moment of conception as impossible because that infusion does not transform *the mother’s menstrual blood* into an organic body.<sup>33</sup> But that is to mix paradigms: modern proponents of immediate hominization are almost exclusively updating Thomas’ biology, and this means when they argue for immediate hominization they are not speaking of the mother’s menstrual blood but of the fertilized egg. Moreover, Amerini thinks that to choose conception as the time for the infusion of the rational soul by God is completely arbitrary, such that one could as easily identify the moment the sperm leaves the father as the moment at which God could infuse the rational soul.<sup>34</sup> In other words, if one wished to argue that the rational soul informs a body not yet formed one might as well choose a time prior even to fertilization for God to transform any old cell into a human being.<sup>35</sup>

If one does not admit that the human soul is infused externally *after* the fundamental vital organs are formed, there is no reason to prefer the moment of conception over that of the detachment of the male semen, and so there is no way

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<sup>32</sup> *Ibid.*, 216-17.

<sup>33</sup> *Ibid.*, 221.

<sup>34</sup> *Ibid.*, 217.

<sup>35</sup> Though of course, immediate animation arguments do not claim this, but that a body may be *already sufficiently formed* at the zygote stage.

to avoid the “traducianist” conclusion that the human soul is transmitted to the embryo directly by the parent.<sup>36</sup>

This is of course to sweep away arguments such as Ashley’s, as if there were could be no real difference between one single-celled organism and the next with regard to their proximity to human personhood.<sup>37</sup>

Though the depth of his scholarship is humbling, it was disappointing that Amerini was willing to settle for an interpretation of Thomas in which Thomas has nothing at all to say about the human embryo, about the existence of the strange series of lives animating what will eventually become a truly human body, beyond the mere fact that *something* is generated. It does not seem to trouble Amerini that the embryo remains so opaque to knowledge. I contend that it is not enough, for Thomas at least, to say merely that an embryo is the subject of generation, as if it were something that can only *be* and can only *be known* in any way at all at the end of the process. What is it while it is being generated? When the sculptor is working in bronze, the bronze remains bronze. It does not become non-being. It may be best understood as worked bronze, but it is not art until the sculptor has finished his work and realized his plan in the medium. When the seminal power is working on the menstrual blood, heating it, bubbling through it, setting it, and then forming it, does it remain blood? When Thomas describes the embryo as having the kind of life a plant manifests, one suited to converting food with which to grow larger, *is* it a plant? When the embryo has a sensitive soul, and it moves and even experiences and responds to sensations within the womb, is it an animal? In some ways the distinction between art and nature make this even clearer for the embryo than it is for

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<sup>36</sup> *Ibid.*, 226.

<sup>37</sup> It is worth noting that this is a view Amerini himself challenges, specifically in regard to arguments conflating the relative potentialities of sperm and zygote. *Ibid.*, 168-69.

the statue. The statue, as an artifact, only has its form within itself when the sculptor has finished realizing that form. Bronze is realized as a statue not only by an external agent but also by an external finality. The embryo, on the other hand, is realized as human with the agency of the seminal power, and by its nature, which is an internal finality. Amerini recognizes the distinction in some sense, for he writes that “it is not enough to say that the human comes from the embryo; we must add that the embryo *becomes* a human being, while we cannot say of the tree that it becomes a table.”<sup>38</sup>

In his examination of the embryo within Thomas’ work, Amerini has been more Thomist than Thomas. To borrow de Dorlodot’s phrase, “To be a perfect Thomist, then, one must abandon St. Thomas on this point!”<sup>39</sup> De Dorlodot addresses this comment to those who have difficulties with the way Thomas writes about the instrumental cause in the course of his treatment of embryogenesis, is if they feel the need to protect one of Thomas’ own principles from him. This is much what Amerini has done, in that while he himself defines a nearly content-less identity for the embryo, he freely admits that Thomas himself can comfortably view the embryo as the same subject throughout its successive generations, and perhaps even the same subject as the human being it will become.<sup>40</sup> Amerini has demonstrated that Thomas cannot believe what Thomas does in fact believe.

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<sup>38</sup> *Ibid.*, 109. Emphasis original.

<sup>39</sup> Messenger, *Theology and Evolution*, 277.

<sup>40</sup> *Beginning and End*, 228.

“...philosophy aims not at knowing what men feel, but at what is the truth of things.”  
 -Thomas Aquinas<sup>1</sup>

## Chapter 6: “Summa” Kind of Argument, With a Different Question

So it is that, in what Bernard Lonergan liked to call an *inverse insight*,<sup>2</sup> we grasp that we have been asking Thomas the wrong question. How do we know it is the wrong question? Because, among other things, we can find no answer to it, and end up, with Amerini, unable to say what Thomas himself seems freely to believe about the embryo. Therefore, a new beginning is needed, and a new question. Rather than asking *When does the embryo become human?* we will ask the broader question *What is the embryo?*, and refuse to assume from the beginning that we know which options are truly not options for Thomas. We will stay within the confines of the embryological data as he knew it, ever aware that, long before it was an ethical problem for us, it was an ontological problem for him, one with profound challenges and implications for his philosophical system.

To that end, and with a mixture of earnestness and jest, I offer a new question for us to ask Thomas, posed in a familiar format.<sup>3</sup> It is a format which encourages attention to all of the available logical options, and discourages assumption. It is no accident that Thomas’ mind so well suits the scholastic style: they were made for and by each other. For those unfamiliar with the structure, it might help to remember the game *Twenty*

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<sup>1</sup> Aquinas' *Exposition of Aristotle's Treatise on the Heavens* I.22.

<sup>2</sup> Bernard Lonergan, *Insight: A Study of Human Understanding*, Collected Works of Bernard Lonergan, vol. 3, edited by Frederick E. Crowe and Robert M. Doran, (Toronto: University of Toronto Press, 1992), 44.

<sup>3</sup> I mean no disrespect to Thomas’ work by framing my own poor attempt in these familiar trappings, nor do I wish to dress up my work in his words so that they might have more effect. Rather, I hope the familiar format will encourage even a faint echo of his particular genius for clarity and order.



*Questions:* one person chooses an object, and players ask questions in an effort to identify the object by reducing all of the possibilities down to the one chosen subject. The game traditionally begins by asking which category the object fits into: *Is it animal, vegetable, or mineral?* We will ask Thomas something very like that.

## QUESTION 120

### Of the Being of the Embryo

To understand how Thomas Aquinas might categorize the being of the (genetically human) embryo before the advent of the rational soul, we must consider the possible options. They are four, equally divided between *not human* and *human*:

1. The embryo is not a being.
2. The embryo is not a particular being in that it does not belong to a species, but it is a sort of being in general in that it belongs to a genus.
3. The embryo is not yet human but is becoming so.
4. The embryo is human.

### First Article

#### Whether the embryo is a being at all?

*Objection 1.* The embryo is not a primary substance, for it does not yet possess its proper form; therefore, it is not truly a being in its own right.

*Objection 2.* It seems that the early embryo is not a being. For it does not yet possess the rational soul, which is the form of the human body.<sup>4</sup>

*Objection 3.* Moreover, it seems likely that any life it manifests is life belonging to it as a part of another whole; that is, it exists as an organ of its mother or as fueled and directed by the seminal power of its father's sperm.

***On the contrary,*** Thomas says that the soul “is the first principle of life in those things which live.”<sup>5</sup>

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<sup>4</sup> *Summa Theologica* Ia.76.1.

<sup>5</sup> *Ibid.*, Ia.75.1.

*I answer that,* It is evident that the embryo at all stages is animated by a soul of some type. Given that, according to Aristotle, “nobody would put down the embryo as soulless or in every sense bereft of life” and that both he and Thomas everywhere describe the early embryo as being animated by the nutritive soul and then the sensitive soul before the advent of the rational soul, it is clear that the embryo is alive, and in that it is animate, the embryo has its own being and is not an organ or tissue of the mother’s being.<sup>6</sup> It is in act by its animating form, and by that act it has existence.<sup>7</sup> That Thomas and Aristotle are correct in their estimation that the embryo is alive is evidenced by its growth from something too small to be seen by the naked eye to something quite large by comparison. It must take in nourishment and convert it to bodily mass. It also moves, and this movement may sometimes be felt by the mother very early, even before we should expect it to be well formed. But these actions may only be accomplished by a power of the embryo itself.

*Reply Obj. 1.* Though it is true that the embryo does not at first have the rational form it will at a later time possess, it is evident that it is indeed, a primary substance. According to the Philosopher, primary substance is “what is neither in a subject nor said of a subject.”<sup>8</sup> But this is true of the embryo. Therefore, it is a primary substance.

*Reply Obj. 2.* There are many kinds of souls, each with their own complement of powers. The rational soul is the most noble of animating forms, but it requires a certain disposition of matter which is not yet in the embryo until the seminal power has so formed and shaped it. Yet before the father’s instrumental power is exhausted, the

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<sup>6</sup> *Generation of Animals* II.3.736a32.

<sup>7</sup> A “thing acts by that whereby it is in act” and “[i]t is clear that the first thing by which the body lives is the soul.” *Summa Theologica* Ia.76.1.

<sup>8</sup> Aristotle, *Categories* 5.2a14.

embryo already has a life of its own, and takes in nourishment and grows. Now these are powers which belong to the nutritive soul. Thus, the Philosopher says that “at first such embryos seem to live the life of a plant.”<sup>9</sup>

*Reply Obj. 3.* Vital functions are from an intrinsic and not an extrinsic principle.<sup>10</sup> That the embryo grows and then moves may only be ascribed to a principle intrinsic to it. The mother’s principle of nourishment and growth would not suffice for the embryo; it would nourish and grow her body and not another. But this intrinsic principle must be a soul, for a soul is that which makes a body a living body, and it is by movement and growth that we detect the presence of life. Moreover, the Doctor writes that “the soul is in the embryo; the nutritive soul from the beginning, then the sensitive, lastly the intellectual soul.”<sup>11</sup>

## **Second Article**

### **Whether the embryo belongs to a genus but not a species?**

*Objection 1.* It seems that the early embryo is not a particular kind of being; that is, it is not an individual member of a species, but is a being in a general sense; that is, it is an individual member of a genus. For the rational soul gives the specific difference between humankind as a species and all other animals. Therefore, the early embryo is alive in a general sense but is irreducible to a species.

*Objection 2.* Moreover, the Philosopher describes the embryo as first a plant in general, then an animal in general, before it receives its final and distinctive form: “an animal does not become at the same time an animal and a man or a horse or any other particular

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<sup>9</sup> Aristotle, *Generation of Animals* II.3.736b12.

<sup>10</sup> *Summa Theologica* Ia.118.2; *Summa Contra Gentiles* II.89.

<sup>11</sup> *Summa Theologica* Ia.118.2.

animal. For the end is developed last, and the peculiar character of the species is the end of the generation in each individual.”<sup>12</sup> Therefore, the embryo is first in the genera *plant*, and then in the genera *animal*, before it becomes specifically a man.

**On the contrary**, The Philosopher says, “no animal exists apart from the particular animals.”<sup>13</sup> And also, “clearly no universal exists apart from the individuals.”<sup>14</sup>

*I answer that*, Aristotle distinguishes between subjects, species, and genera, identifying what may be called *primary substance* and what must be termed *secondary substance*.

“The species in which the things primarily called substances are, are called *secondary substances*, as also are the genera of those species. For example, the individual man belongs in a species, man, and animal is a genus of the species, so these—both man and animal—are called secondary substances.”<sup>15</sup> It is the individual in the species that exist as such. In fact, the extent to which genus and species may be said to exist is relative to their proximity to the individual existent. The philosopher writes “[o]f the secondary substances the species is more a substance than the genus, since it is *nearer to the primary substance*.”<sup>16</sup> And again: “If the primary substances did not exist it would be impossible for any of the other things to exist.”<sup>17</sup> That the embryo exists demonstrates that it exists as primary substance, and not as secondary substance. In a related passage, Aristotle writes “[e]very substance seems to signify a certain ‘this’. As regards the primary substances it is indisputably true that each of them signifies a certain ‘this’; for the thing revealed is individual and numerically one. But as regards the secondary

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<sup>12</sup> *Generation of Animals* II.3.736b1-4.

<sup>13</sup> *Metaphysics* VII.13.1038b33.

<sup>14</sup> *Ibid.*, VII.16.1040b27.

<sup>15</sup> *Categories* 5.2a15-18.

<sup>16</sup> *Ibid.*, 5.2b7. Emphasis mine.

<sup>17</sup> *Ibid.*, 5.2b5-6.

substances, though it appears from the form of the name—when one speaks of man or animal—that a secondary substance likewise signifies a certain ‘this’, this is not really true; rather, it signifies a certain qualification—for the subject is not, as the primary substance is, one, but man and animal are said of many things.”<sup>18</sup> Therefore, a genus and a species may only be said of an individual subject, and is realized in a secondary way, *in* the being of that individual subject. But it is always the individual subject which exists, never the genus or species as such. Thus, the embryo cannot be a plant or animal in general. From this it is clear how to answer the first and second objections.

### **Third Article**

#### **Whether the embryo is becoming human?**

*Objection 1.* It seems that the early embryo is not yet human but is only becoming so. For it is evident that the embryo does not have the human soul, as it does not have the requisite organs necessary for the exercising of the sensory powers. Therefore, it is not yet human. It is, however, in successive generations, being suitably disposed to receive the rational soul by the power in the father’s semen. That it will become human is clear, therefore, its being is that of something which is *becoming* human.

*Objection 2.* The embryo exists as successively closer and closer to being human, as the sensitive soul is more noble than the nutritive soul, and the rational soul the most noble of all. But *becoming* means simply a motion towards actuality.

***On the contrary,*** Stands the Philosopher, for whom “when we are dealing with definite and ordered products of Nature, we must not say each is of a certain quality because it becomes so, but rather that they become so and so because they are so and so, for the

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<sup>18</sup> *Ibid.*, 5.3b10-18.

process of becoming or development attends upon being and is for the sake of being, not vice versa.”<sup>19</sup>

*I answer that*, Substantial form “is brought into act not continuously or by degrees but instantaneously.”<sup>20</sup> Likewise, the Philosopher writes: “Substance, it seems, does not admit of a more and a less...For example, if this substance is a man, it will not be more a man or less a man than itself or than another man.”<sup>21</sup> Therefore, the embryo’s being cannot be a something that is becoming. If it is not yet human, it will not be ordered toward human good, for all products of nature desire the good appropriate to them, and the embryo is a product of nature. But the embryo is ordered to a human good. Therefore, it is human, and not merely becoming so. Moreover, what is generated by human parents cannot be other than human, however imperfect.

*Reply Obj. 1.* There is only one substantial form in a composite. Therefore, it is impossible that the nutritive soul will remain when the sensitive comes, or the nutritive and sensitive when the rational comes, for then there will be not one embryo becoming more human, but multiple individuals. If the embryo with a nutritive soul is not already human, it cannot become so when the rational soul arrives. The nutritive soul does not endure to become human by an addition of ‘human’ soul.

*Reply Obj. 2.* The generation of an animal is not a continuous movement.<sup>22</sup> Therefore, the embryo cannot be becoming human, if it already exists. If it is not yet human, it cannot become so by a continuous process which will preserve the identity of the subject throughout.

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<sup>19</sup> *Generation of Animals* V.1.778b.

<sup>20</sup> *Ibid.*, 3.9.

<sup>21</sup> *Categoroes* 5.3b33-4a1.

<sup>22</sup> *Summa Theologica* Ia.118.2.

#### **Fourth Article**

##### **Whether the embryo is human before the advent of the rational soul?**

*Objection 1.* It seems that the early embryo is not human before the advent of the rational soul. For if it is already human before God makes the rational soul, then God's actions are in vain. But this cannot be so, for in Isaiah God says of Himself "my word that goes out from my mouth...will not return to me empty, but will accomplish what I desire and achieve the purpose for which I sent it."<sup>23</sup>

*Objection 2.* If the embryo were human before the advent of the rational soul, then it would be possible for the body to exist without the soul. But this is impossible, for the soul is the act of the body. Therefore the embryo is not human.

***On the contrary:*** The magisterium teaches that, "supposing a belated animation, there is still nothing less than a *human* life, preparing for and calling for a soul in which the nature received from parents is completed."<sup>24</sup>

*I answer that,* Either the embryo must be human before the rational soul; or, as it has been shown that it is neither 1. non-being nor a part of another's being; 2. a member of a genus but not of a species; 3. nor merely becoming human; it must be some other, as yet unrecognized and entirely new species. Moreover, the embryo from human parents must, at the time of its formation by the nutritive soul, exist as a distinct species as compared to the embryo formed by the sensitive soul. In addition, if we would hold this view of the embryo, we must also believe that each embryo generated from animal parents exists first

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<sup>23</sup> *Isaiah* 55:11 (NIV).

<sup>24</sup> Sacred Congregation for the Doctrine of the Faith, *Declaration on Abortion*, (Washington D.C.: United States Catholic Conference, 1975), 13, note 19.



as an individual member of a new and distinct species while formed by the vegetal soul. For the sensitive soul of man and of animals is generically the same, but specifically different. Thomas upheld this distinction even with regard to the embryo.<sup>25</sup> It seems likely that, in such a view, the distinction of species in the parents must be reflected and preserved in the nutritive forms of their embryonic offspring; that is, the embryonic cat must be, in its nutritive form, specifically different from the embryonic llama in its nutritive form, etc. If this were the case, each animal species would be distinct from all other animal species not only in its proper and final species but with regard to the embryonic species of its nutritive offspring, effectively multiplying the number of species. Such a solution, in that it necessitates the invention of orders of multitudes of new species, is ridiculous. Additionally, the embryo may be said to be human on account of its parents, who give it a human nature, though they do not give it a spiritual soul; and also with regard to its end. For to interpret Thomas as holding a delayed hominization view of the human embryo is to ignore the intelligible unity of the embryonic life developing into the child, then growing into the man, then being transfigured by grace into the beatified saint. As such, and because of the reasons listed above, we must understand the embryo to be already human, even before the advent of the rational soul.

*Reply Obj. 1.* God works not only directly in creating the rational soul, but also indirectly through the actions of the father in generation. That God allows human parents to cooperate with him in the generation of offspring whose final and perfecting form is incorporeal is a measure of his goodness, and of the way in which he has ordered the world. For generation is always of like to like, and human generation would not be a true generation if human offspring were not produced by it.

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<sup>25</sup> *Summa Contra Gentiles* II.89. See also *On the Power of God* 1.3.11.

*Reply Obj. 2.* It is true that the body without a soul is not a body, but a corpse. Yet the embryonic body is not without a soul when it is without the rational soul, as shown above. Moreover, it would already be a human body in the sense that it had a human nature from the father, and be animated by the nutritive or sensitive soul of man inasmuch as he is not only rational but also alive and an animal, and because it was being made constantly more disposed to the rational soul.

*Everything generated is first imperfect.*  
-Thomas Aquinas<sup>1</sup>

## Chapter 7: Back to the Beginning with Thomas

When we approach the problem of the embryo with the question *when does it becomes human?* we are looking for a point at which the embryo begins to meet a certain criteria, and it seems that there are many answers to the question, depending upon what criteria we have in mind. When we pay attention to the embryo as a something that already actually exists, and something that is *alive*, something intelligible in regard to its end but considered in itself rather opaque to us, we are moved to ask another, more basic question: *what is it?* We have recognized an ontological problem. Again, there are many possible answers, but the embryo, which seemed opaque at first, now bends itself somewhat to our questions, especially within the structures of Thomist metaphysics. It seemed from the outset that Thomas, in identifying the infusion of the rational soul at a point well after the embryo begins to exist, does so in order to separate early developmental stages from a later, human life. However, after due consideration of the other ontological possibilities, it turns out that the only sort of being the embryo can be, after all, is a *human* one. In the terms adopted by participants in the debate about the embryo, it seems that Thomas, given his metaphysics, is in truth a proponent of delayed (rational) animation and at the same time, a proponent of immediate hominization. That is, for Thomas, the embryo is human even before it has a rational soul.

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<sup>1</sup> *Summa Theologica* Ia.99.1.

This strange outcome of the problem of the embryo necessitates another exploration of Thomas' work, especially of those passages in which he writes about the embryo. For if this very different answer is at every turn disallowed by what he writes, we will have discovered not an answer, but a schism within his metaphysic. We will have discovered that he cannot answer what sort of thing the embryo is, though he speaks of it in some detail, and though to him, being is intelligible. On the other hand, if our answer is not immediately ruled out, we may take this as confirmation that, though we do not know precisely what Thomas actually held regarding the embryo, we have identified a view that he could have held, were he to have been asked this question. In that way, the proposal of the last chapter, if supported by this return to Thomas' work, will prove superior to other views already examined. The delayed animation views in chapters two and three, for instance, cannot give a satisfying answer regarding the ontology of the early embryo. The immediate animation views of chapters three and four, depending as they do on an embryology foreign to Thomas, cannot be views he actually held, and in addition may, by doing away with the succession of souls, have obscured something valuable in Thomas' original account, something that allows him to account for the almost bewildering range of human existence from its humble beginning to its incommensurate end.

Because our tentative answer to the problem of the embryo is that for Thomas it is already a human being, we will begin our account, not with the embryo as already formed by the semen, but with Thomas' understanding of the semen, in order to ascertain how the embryo differs from it. As this is a subject Thomas also finds important, and for similar reasons, the choice seems warranted. We will conclude our account, not with the

infusion of the rational soul, but with Thomas' description of infancy and childhood, in order to ascertain whether this view of the embryo is "of a piece" with the rationally ensouled embryo and with the child it becomes.<sup>2</sup> Because Thomas depends so heavily upon Aristotle's embryology, we will also examine some pertinent passages from his work, especially from the *Generation of Animals*.

### The Seminal Power

Within the father's semen is what Thomas called a *formative* power or virtue. It is an active power of generation of the father's soul.<sup>3</sup> It is not itself a soul, nor does it become the nutritive or sensitive souls, because then the progenitor and offspring would be the same being.<sup>4</sup> It most certainly is not transmuted into the rational soul. Semen is not properly a part of the father's body, since it comes from what is left over at the end of the process of converting food into human flesh. Aristotle speaks of it as a highly concocted residue of nutriment, a sort of rarified blood.<sup>5</sup> As such, while not strictly animated, it has a "certain energy" because of the process by which the father's body has converted the food. The semen is made out of that which is almost but not quite finished being converted into the body.<sup>6</sup> Thomas leaves to Aristotle most of the descriptions of the semen setting the menstrual blood like rennet curdling milk, though he alludes to it obliquely in a commentary on the Book of Job. He is clearly familiar with Aristotle's *Generation of Animals*, but as we might expect, his main concern when treating of the

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<sup>2</sup> In the hopes of identifying both the continuities and the discontinuities of Thomas' descriptions as they appear, I depend upon the chronologies of Thomas' works provided by Fabrizio Amerini, *Beginning and End*, and Etienne Gilson, *The Christian Philosophy of Saint Thomas Aquinas* (Toronto: Random House, 1956).

<sup>3</sup> *Summa Theologica* IIIa.32.1.

<sup>4</sup> *Summa Theologica* Ia.118.1.

<sup>5</sup> Aristotle, *Generation of Animals* I.19.726b10.

<sup>6</sup> Thomas Aquinas, *On the Power of God* 3.12.

embryo is not to ruminate on how it comes to be. He is happy to leave the opening of hen's eggs to Aristotle and to his teacher, Albertus Magnus. For Thomas, the problem at hand is how to speak of the human embryo as being successively formed by different souls when man, and indeed any other being, has only one soul. In passages on the embryo, one is more likely to read a reiteration of his statement on the unicity of substantial forms than an in-depth account of the biology of the embryo.

Nevertheless, he is very interested in establishing how the souls come to be in man. Semen has within it a force that is aimed at generation. Its actions are ascribed to the father, in that its power comes from the father's soul; it is his instrument in making another like himself.<sup>7</sup> In a lengthy passage in *Summa Contra Gentiles*, he explains how he views the operation of this power, in contrast to the power the offspring has of its own soul:

it causes the formation of the body in so far as it operates by virtue of the father's soul, to whom generation is ascribed as the principal agent, and not by virtue of the soul of the person conceived, even after the soul is in that person: for the subject conceived does not generate itself, but is generated by the father. This is clear to anyone who considers each power of the soul separately. For it cannot be ascribed to the soul of the embryo by reason of the generative power; not only because the generative power does not exercise its operation until the work is completed of the nutritive and augmentative powers which are its auxiliaries, since to generate belongs to that which is perfect; but also because the work of the generative power is directed, not to the perfection of the individual, but to the preservation of the species. Nor again can it be ascribed to the nutritive power, the work of which is to assimilate nourishment to the subject nourished, which is not apparent here; since in the process of formation the nourishment is not assimilated to something already existing, but is advanced to a more perfect form and more approaching to a likeness to the father. Likewise neither can it be ascribed to the augmentative power: since it belongs to this power to cause a change, not of form, but of quantity. As to the sensitive and intellective part, it is clear that it has no operation appropriate to such a formation. It remains then that the formation of the body, especially as regards the foremost and principal parts, is not from the form of the subject generated, nor from a formative power acting by virtue of that

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<sup>7</sup> *Ibid.*, 3.11.

form, but from (a formative power) acting by virtue of the generative soul of the father, the work of which soul is to produce the specific like of the generator.<sup>8</sup>

In this passage, at least, it seems that generation is purely a function of the father's soul, and that, though the embryo may in fact have a soul, its continual formation towards disposition for the rational soul is due entirely to the father's agency. In order to bring the embryonic body through its intermediate forms, it seems that the seminal power would have to reside with the embryo, and continue to form it.

Accordingly this formative power remains the same in the aforesaid spirit from the beginning of the formation until the end. Yet the species of the subject formed remains not the same: because at first it has the form of semen, afterwards of blood, and so onwards until it arrives at its final complement.<sup>9</sup>

The seminal power retains the force it has from the father's soul.<sup>10</sup> This force is not just a generic generative power, but the power to generate a specific kind of life. "The generating power begets not only by its own virtue, but by that of the whole soul, of which it is a power. Therefore the generating power of a plant generates a plant, and that of an animal begets an animal."<sup>11</sup> From this we may infer that man generates man, and not something that is truly some other kind of being before having the rational soul. What man is generating is like him in species. If what is generated is animal, then it is an animal as man is an animal, and not as a raccoon or polar bear is an animal. For man's sensitive soul is different in species, though not in genus. This latter point is confirmed in several passages, and its importance should not be overlooked.<sup>12</sup>

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<sup>8</sup> 2.89.

<sup>9</sup> *Ibid.*

<sup>10</sup> *On the Power of God* 3.11.

<sup>11</sup> *Summa Theologica* Ia.118.1.

<sup>12</sup> *On the Power of God* 3.11; *Summa Theologica* III.2.2; *Summa Theologica* III.2.5; Amerini, *Beginning and End*, 135.

There is some question as to how long the seminal power shapes the embryo. In one passage, Thomas describes it as remaining even *after* the rational soul comes, serving to regulate the body, and somehow subsumed into the body's activity.<sup>13</sup> The statement is made in response to a concern that an earlier dissipation of the semen would in effect demonstrate its superfluity, and for Thomas nature is not superfluous. As other passages demonstrate, the semen can hardly be superfluous if it has achieved its end, the generation of another like the father. Therefore, we may weight this passage considerably less than others, since its main concern in attributing a longer duration has nothing to do with the embryo itself, and everything to do with a concern which is apparently resolved in other contexts.

A conflicting text appears in Thomas' account of the generation of man in the *Summa Theologica*:

And after the sensitive soul, by the power of the active principle in the semen, has been produced in one of the principal parts of the thing generated then it is that the sensitive soul of the offspring *begins to work towards the perfection of its own body*, by nourishment and growth. As to the active power which was in the semen, it ceases to exist, when the semen is dissolved and the (vital) spirit thereof vanishes. Nor is there anything unreasonable in this, because the force is not the principal but the instrumental agent; and the movement of an instrument ceases when once the effect has been produced.<sup>14</sup>

Thomas indicates that after the seminal power has produced the sensitive soul "in one of the principal parts" of the embryo its work is finished, and the embryo is in charge of its own perfecting; what we might think of as development towards maturity. At this point, Thomas believes the seminal power "ceases to exist." It is this passage which Messenger, in his analysis of the role of the formative virtue, wished to interpret as speaking not of

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<sup>13</sup> *On the Power of God* 3.9.

<sup>14</sup> *Summa Theologica* Ia.118.1. Emphasis added.



human generation, but of animal generation.<sup>15</sup> The confusion arises because Thomas uses the phrase “perfect animals.” Messenger seems to be unaware that Thomas is referring to Aristotle’s classification of animals, man included, as more or less perfect in terms of their manner of generation. Take this passage, for example: “The perfect animals, those internally viviparous, keep the developing embryo within themselves and in close connection until they give birth to a complete animal and bring it to light.”<sup>16</sup> Man is clearly included in this category, and further confirmation lies in Thomas’ choice of subject matter in this passage: the origin of the sensitive soul of *man*. This is a particularly troubling passage to those who are sure Thomas thinks of the embryo as entirely passive under the formative power of the semen, and for good reason. In fact, if we understand Thomas to believe that there is further perfection of the embryo’s body still to be completed before it is suited to rational ensoulment, this passage means that the embryo *does this work for itself* from within. For now it is enough to merely note the conflict between different texts; at a later point it is possible that we may be able to substantially resolve it.

When it is first formed, the material of the embryo’s body is the mother’s menstrual blood. This blood is specially suited to generation. It is, Aristotle believes, a sort of badly concocted, or at least, not completely concocted, female equivalent to semen.<sup>17</sup> One of the markers of the priority of the male in generation is his superior heat: that the female tends to be colder is the reason her body is not able to completely concoct her blood into semen the way a male is able to do.<sup>18</sup> Nevertheless, it is also blood which

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<sup>15</sup> *Theology and Evolution*, 254.

<sup>16</sup> *Generation of Animals* II.4.737b16-17

<sup>17</sup> *Ibid.*, I.19.726b31.

<sup>18</sup> *Ibid.*, IV.1.765b15-17.

has been further heated and worked on, and like semen, therefore it is potentially all the parts of the body, because blood is that which the mother's soul has made out of the food she has taken in so that it will be converted to her true body and become part of herself. The difference between the mother's menstrual blood and the father's semen, in the context of generation, is that by its further concocting, the semen has within it a power, principle, or movement of soul: the formative power. The other difference is that nothing of the material component of the semen goes on to form the embryo's body.<sup>19</sup> It is made up of the mother's menstrual blood, in which "the vegetative soul exists from the very beginning," but only in a latent capacity, in first act. The power in the semen 'wakes' it, as it were, bringing it into second act. As soon as this vegetative life is actually functioning, when it "attracts nourishment, then it already operates in act."<sup>20</sup> That is, then the embryo already has its own principle of life, manifested in the proof that its nutritive powers are already operating. Not incidentally, this also means that the embryo has an organic body, for even plants have organs, of a sort, and nutrition is not possible unless there is a structure within the body for taking up food, processing it, and distributing the resulting nutriment.

### **Generation and Corruption**

*Generation* is a change of substance. It is the coming to be of the new composite; the old composite no longer exists but is *corrupted*. In the context of living composites, generation is the continuation of the species, from progenitor to offspring. So it is that generation has to account not only for discontinuity but also for continuity. Never is this

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<sup>19</sup> *Ibid.*, I.20.729a9-11.

<sup>20</sup> *Summa Theologica* Ia.118.1.

tension more pronounced than in the process of generating a human being. Generation is proper to human beings in our animal nature. Even in the state of innocence, if Adam had not sinned, there would have been human generation; we had an “animal life” before the Fall.<sup>21</sup>

We know that the embryo has soul from the start: “the nutritive soul from the beginning, then the sensitive, lastly the intellectual soul.”<sup>22</sup> But these souls do not layer on top of each other, for then the embryo (and the man) would not be one being but many. This result, more than anything, is Thomas’ concern when he writes about the embryo. Rather, “the generation of one is the corruption of the other.”<sup>23</sup> Thus human generation is not “simple” in that it encompasses a series of generations and corruptions.<sup>24</sup> It would be easier to account for the embryo if its nutritive soul became the sensitive soul, which, illumined somehow, became the rational soul, but a substantial form is not perfected by stages. It “is brought into act not continuously or by degrees but instantaneously.”<sup>25</sup> Instead, Thomas speaks of the changes in the embryo this way:

when a more perfect form supervenes the previous form is corrupted: yet so that the supervening form contains the perfection of the previous forms, and something in addition. It is in this way that through many generations and corruptions we arrive at the ultimate substantial form.<sup>26</sup>

The father’s formative power facilitates this by shaping the mother’s blood, and then the embryo’s body, to reduce its potentiality to act, differentiating the matter as to organs, “disposing matter and forming it for the reception of the soul.”<sup>27</sup>

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<sup>21</sup> *Ibid.*, Ia.98.1; *Ibid.*, 97.3

<sup>22</sup> *Ibid.*, Ia.118.2.

<sup>23</sup> *Summa Contra Gentiles* II.89, *Summa Theologica* Ia.118.2.

<sup>24</sup> *On the Power of God* 3.9.

<sup>25</sup> *Ibid.*, 3.9.

<sup>26</sup> *Summa Theologica* Ia.118.2.

<sup>27</sup> *On the Power of God* 3.9.

With regard to the coming to be of a new form in a substance, Thomas interprets Aristotle as saying that “in a certain respect matter is corrupted and in a certain respect it is not. For insofar as privation is in it, it is corrupted when the privation ceases to be in it, as if we should say that unshaped bronze is corrupted when it ceases to be unshaped.”<sup>28</sup> It might be more instructive to think of this process of generation, at least with regard to the embryo, as one of perfection: not of the perfection of a form, which for Thomas is impossible, but of a perfection of the potential in the material. He sets this precedence for us when he writes concerning the advent of the rational soul that “clearly, however, when a perfect form arrives an imperfect form is always removed.”<sup>29</sup> At no point, then, is there corruption in the sense that what has been formed is lost, for then there would be no point in a series of generations; each would begin again with an unformed mass rather than retaining the perfections already realized by the previous formation.

Certainly, when compared to the sensitive soul, the rational soul is a perfection, and likewise for the sensitive soul as compared to the vegetal. In addition, the embryo is made more perfect with regard to its human nature and final end when it receives a higher soul in place of a lower.<sup>30</sup> Thomas wrote at length about the way that a higher soul possesses all of the abilities of the lower in addition to new powers. In fact, “in the case of active and functioning powers what we find is this, that the higher a power is, the more things does it include within itself, not in composite fashion but as a unit.”<sup>31</sup> He illustrates this by way of the continuity between a geometrical figure and that figure having one additional side:

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<sup>28</sup> *Commentary on Aristotle's Physics*, I.15.139.

<sup>29</sup> *On Good in the Order of Nature*, 1.4.1.

<sup>30</sup> *Summa Theologica* Ia.91.3.

<sup>31</sup> *On Spiritual Creatures* 3.

...the pentagon virtually contains a quadrilateral: for it has this and still more; not that something proper to a quadrilateral and something proper to a pentagon exists outside the pentagon, as though there were two figures. So also the intellectual soul virtually contains the sentient soul, because it has this and still more, yet not in such a way that there are two souls.<sup>32</sup>

In a number of passages, Thomas characterizes these successive generations as a process of perfecting the embryo. He describes the embryo as “on the way to perfection” before the rational soul, and therefore, though it is in a genus and species, it belongs to them “by reduction.”<sup>33</sup> He even speaks of the embryo as the continuing subject of perfection in the succession of souls, which his interpreters have found difficult to do, in that there is no continuity of form or numerical identity of matter across these generations. After considering other ways in which to reconcile embryology with metaphysics, and out of concern to speak of man as one being, Thomas writes in another passage that:

The only thing left to say is that in the generation of man or of animal, there are many generations and corruptions succeeding one another reciprocally, for when a more perfect form comes the less perfect form fades away. And thus, although in the embryo there is first the vegetative soul only, when it has attained a greater perfection the imperfect form is taken away, and the more perfect form takes its place, i.e., a soul which is vegetative and sentient simultaneously; and when the last departs there comes in the most complete ultimate form, which is the rational soul.<sup>34</sup>

Though he does not think it is consonant with other parts of Thomas’ metaphysic, Amerini concurs that for Thomas “the embryo maintains its identity during the entire process, becoming perfected through a substitution of forms.”<sup>35</sup>

Though he himself comes to a another conclusion about the embryo, he also notes that Thomas

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<sup>32</sup> *Ibid.*

<sup>33</sup> *On the Power of God* 3.9.

<sup>34</sup> *On Spiritual Creatures* 3.

<sup>35</sup> Amerini, *Beginning and End*, 176.

seems to argue in this direction, observing that not-formed embryos necessarily have a form and that, therefore, as such they are entities in act, for otherwise one could not even admit that there is an alternation of generations and corruptions in the process of animal generation. Their form, however, is imperfect and incomplete.<sup>36</sup>

Thomas describes nutritive and sensitive forms in the embryo as “incomplete forms” because they do not “perfect any natural species nor [are they] the intention of nature, but...something on the road to generation and corruption.”<sup>37</sup> That is, the embryo, when it “lives the life of a plant” is not really a plant, nor is it an animal when it has the sensitive soul.<sup>38</sup> It is always something that has an incomplete and imperfect version of its ultimate form: the rational soul. Because the seminal power is suited to generating man in so far as he is an animal, that is precisely what it does. It does not generate some other non-human form, but neither does its power suffice to complete the generation of a human being.

### **The ‘Infant’ in the Womb**

That Thomas thinks of the embryo as already human in some way becomes evident in his descriptions of the infant in the womb before the rational soul. He is not terribly careful to differentiate precise terms, and has no nomenclature for the embryo with which to specify successive stages. Rather, he is content to refer to it in a rather loose way, remarking in one place that “the infant can exercise [the sense of touch] in the womb even before it has received the rational soul.”<sup>39</sup> Even at the beginning, the embryo has nourishment and growth, and it has these by the powers of its own soul and not its mother’s soul, because these are necessarily intrinsic operations: if the mother’s soul

<sup>36</sup> *Ibid.*, 174. He references *Aquinas' Exposition of Aristotle's Treatise on Generation and Corruption* I.8.60; *Spiritual Creatures* 3; *Quodlibetal Questions* IX.5.1 and I.4.1.

<sup>37</sup> *Exposition of Aristotle's Treatise on Generation and Corruption* I.8.60.

<sup>38</sup> *Summa Contra Gentiles* 2.89.

<sup>39</sup> *Summa Theologica* IIIa.34.2.

operates so as to take in nourishment, it is her body and not another's which is fed.<sup>40</sup> The embryo, then, is the one that does the growing and the eating, and with the coming of the sensitive soul, the moving and the sensing as well, and all by its own power. Again, even though the embryo is formed by the sensitive soul and might therefore seem to be more like an animal than a man, it does not possess the soul of an animal, but the animal-like soul that is proper to man at this stage of development. As Thomas describes it, "although the sensible soul in man and dumb animals is of the same genus it does not belong to the same species: thus a man and a dumb animal are not of the same species: consequently the functions of the sensible soul are far more excellent in man than in dumb animals."<sup>41</sup> This line of reasoning also clearly extends to the sort of likeness the embryo formed by the vegetal soul can have with a plant. At no time is the embryo a plant or an animal, or even a generic plant or animal; rather, it always belongs to the human species. There is some essential difference between the life of an animal or plant and the embryo. Moreover, the father does not have an animal nature in himself to bequeath to his offspring in any other way than *as* a human animal. He cannot give it forms appropriate to some other species, as he does not have them in himself.

### Exceptional Conceptions

There are a number of other passages in which Thomas describes the embryo in the womb, before the rational soul: those in which he considers the unusual or miraculous conceptions of Mary, John the Baptist, and Christ. These also provide tantalizing hints of the way Thomas thinks of the embryo, though what emerges is not uncomplicated.

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<sup>40</sup> *Ibid.*, Ia.118.2; *Summa Contra Gentiles* 2.89.

<sup>41</sup> *On the Power of God*, Bk. 1, Q. 3, A. 11, R. 1.

In the third part of the *Summa Theologica*, Thomas considers the question of when the Blessed Virgin was sanctified, specifically whether she was sanctified before the advent of the rational soul. He gives two reasons as to why such was not the case: 1.) Before the advent of the rational soul, sanctification would have to mean something rather different, given that sanctification as a cleansing from sin is by grace, the proper subject of which is the rational soul. Therefore such a sanctification “in whatever manner the Blessed Virgin would have been sanctified before animation” would not meet the technical definition; and 2.) If she had been sanctified before animation with the rational soul, she would have been made holy before acquiring the stain of original sin, thus negating her need for redemption and a Savior.<sup>42</sup> This second reason is much the stronger, and Thomas quotes multiple Scripture passages in its support, emphasizing its weight. It is interesting to note that he goes to the trouble of explaining why it is necessary that she be sanctified after the advent of the rational soul. How much easier it would have been to simply point out that the Virgin could not have been sanctified before the rational soul because she did not yet exist to be sanctified. If such was indeed his view of the embryo, it is curious that he neglects the opportunity to further cement his defense of the unilateral need for salvation and the unique honor due to Christ as Savior of all men. Instead, before she is animated by the rational soul, she is described as herself, not as a precursor to herself. In that same passage, Thomas remarks: “before the infusion of the rational soul, the offspring conceived is not liable to sin.” She is conceived before she is sanctified; she exists as Mary already. In fact, Thomas finds no harm in the practice of certain churches celebration of Mary’s conception as a feast day. He does warn that one cannot celebrate her holiness at conception – in a way she is not yet properly *Blessed*

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<sup>42</sup> 27.2.



Mary – but since the timing of her sanctification is not part of the Church calendar, it may be celebrated on the day marking her conception. The reason that she should not be celebrated on her conception but only on her sanctification is not because she did not yet exist, but because she had not yet been made holy.

Later in that same passage he deals with the problem of John the Baptist, who leapt in Elizabeth's womb in the presence of a pregnant Mary. Thomas notes that Ambrose wrote of John "[a]s yet the spirit of life was not in him and already he possessed the Spirit of grace." Thomas offers two very interesting interpretations: either the "spirit of life" here means the breath of the body and not the "life-giving soul," or, that "as yet there was not the spirit of life, that is the soul, as to its manifest and complete operations." We are left to wonder why Thomas would add that last modifier unless to acknowledge the life and soul that is already present in the early embryo before receiving the intellectual soul.

Probably the most convincing counter example to passages in which Thomas seems to treat the embryo as already human occurs in the context of his discussion of how Christ's body was united to his soul, and more specifically, whether the Word could have been united to Christ's flesh before the rational soul. At one point, Thomas puts matters quite bluntly: "the flesh ought not to have been assumed before the soul, since it is not human flesh before it has a rational soul."<sup>43</sup> Following this, he clarifies that, "before the coming of the soul, there is no human flesh, but there may be a disposition towards human flesh." The difference in Christ's conception as compared to ours is the role of the Holy Ghost, who in this instance undertakes the usual role of the father's seed in this very special case of generation. It is the third person of the Trinity, an "agent of

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<sup>43</sup> *Summa Theologica* III, Q. 6, A. 4, R.

infinite might,” who acts upon the menstrual blood, and not a human father through the formative power in his seed; because of this difference in agent the matter is both disposed and instantly perfected. That is, Mary’s menstrual blood is both developed to the point at which it might be capable of receiving the rational soul and given its proper and final form in an instance of special creation.<sup>44</sup>

However, this identification of the embryonic body as “not human flesh” seems to be related to a concern that there would have been another person to account for if the Godhead had taken on flesh already animated by a nutritive or sensitive soul. That Christ’s conception is instantaneous is due to his unique one person, two nature identity. If his body had not been made in an instant and immediately animated by the rational soul, there would have been two beings, two persons, instead of one. At some point, it would not have been Christ who was being conceived, but something other: if “that which belongs to man did not pre-exist, as subsisting in itself, before being assumed by the Word, it would have had at some time an hypostasis other than that of the Word of God.”<sup>45</sup> Likewise,

if the conception had been going on for any time before the perfect formation of the body, the whole conception could not be attributed to the Son of God, since it is not attributed to Him except by reason of the assumption of that body. Therefore in the first instant in which the various parts of the matter were united together in the place of generation, Christ’s body was both perfectly formed and assumed.<sup>46</sup>

It seems from this that Thomas is implicitly acknowledging that if there had been a normal generation with delayed rational ensoulment, there would have been another

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<sup>44</sup> It must be noted here that Thomas is sure that each rational soul is created by God; Christ’s soul is not an exception in that regard, else his would not be a human nature, as “a difference which would be with reference to the origin of the soul, would bespeak a diversity of nature.” *Ibid.*

<sup>45</sup> *Ibid.*, IIIa.33.3.

<sup>46</sup> *Ibid.*, IIIa.33.1.

human being conceived before the rational soul was given, before the Son of God assumed that body.

Additionally, it is from Mary that Christ receives his human nature. Citing Augustine, Thomas writes that “Christ did not receive human nature from Adam actively, but only materially—and from the Holy Ghost actively: even as Adam received his body materially from the slime of the earth—actively from God.”<sup>47</sup> All that Mary gave her Son is the material out of which His body is miraculously formed. The female role in generation is purely passive, and purely material, and Mary’s part in Christ’s conception is natural, not miraculous.<sup>48</sup> Thomas is saying that her human nature is *in* her menstrual blood. It is this which gives Christ a human nature, that makes Him an Israelite of David’s line, and which makes Him truly her son.<sup>49</sup> Lest we have any doubt, Thomas makes this even clearer in a subsequent passage: “But the Blessed Virgin Mary was nearest to Christ in His humanity: because He received His human nature from her.”<sup>50</sup> If delayed animation really entailed delayed hominization, Mary could have only given her Son a *plant* nature.

In these and similar passages, we notice two trends. The first is that Thomas tends to speak as if he thinks of the embryo as continuous with itself and as continuous with the embryo it will be after the rational soul. This continuity extends to the adult the embryo will grow into. It seems fair at this juncture to concur with Amerini that Thomas has no difficulty whatsoever in thinking of the embryo as already what it will become and as existing in continuity, whatever other difficulties he may have in parsing the language of

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<sup>47</sup> *Ibid.*, IIIa.15.1.

<sup>48</sup> *Ibid.*, IIIa.31.5.

<sup>49</sup> *Ibid.*, IIIa.31.6.

<sup>50</sup> *Ibid.*, IIIa.27.5. Cf. *Ibid.*, IIIa.31, 32.

form, generation, and corruption in writing about it. The other important trend thus far is that it appears in numerous passages that Thomas thinks human nature is conveyed both with the species-specific motion of the father's formative power and in the mother's material power: her menstrual blood.

### **The 'Imperfection' Natural to Infants and Young Children**

Some proponents of delayed animation write as if Thomas believed the advent of the rational soul indicates a real ability to use one's intellect. According to Robert Pasnau, for example, Thomas insists there can be no human being until the fetus "has intellect and will (until it has, for short, *a mind*)."<sup>51</sup> It is difficult to understand how a fetus of twenty weeks gestation can be said to have the power to weigh options and decide freely between them, for this is what it means to will. It is similarly difficult to understand how that same fetus can be said to have the power to make judgments about reality, for that is what it means to operate intellectually. The easy answer is that he means only to indicate that the fetus must have the requisite organs in a final, fully formed state, which will later enable the fetus to be capable of such feats: that if only the embryo has the necessary apparatus ready for acts which for some reason it does not yet perform, this is sufficient to identify the fetus as a human being. However, Pasnau has asked us to identify the appearance of the human being with the first appearance of a being with *mind*. It is not enough that the fetus (or embryo) be the sort of thing that will be capable of displaying such attributes at some later point, for in that case there would

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<sup>51</sup> Pasnau, *Souls and the Beginning of Life*, 524. He locates hominization at approximately the 20-week mark. Cf. Pasnau, *On Human Nature*, 118-19; Donceel, *Immediate Animation*, 83.

be no reason to insist on later hominization rather than immediate hominization as he does.

There is a sad lack of attention within the debate about the embryo to the way Thomas writes about infants. He had no expectations that young human beings would be able to manifest intellect or will. He expected that their actions would be appropriate to their age and development. Children would, he thought, even in the state of innocence, do what children do: eat, sleep, grow.

The same acts are not befitting to man at every season of life. We must, therefore, conclude that children would not have had sufficient strength for the use of their limbs for the purpose of performing every kind of act; but only for the acts befitting the state of infancy, such as suckling, and the like.<sup>52</sup>

Thomas also thought it possible that in the state of innocence, though there would be no defects due to advancing age and the corruption of the body, “there could still have been certain infantile defects which result from birth.”<sup>53</sup> In fact, this physical inability to properly exercise the will in bodily movements is caused, he believed, by the wetness of the brain in infants and young children, which interfered with the ability of the nerves to command movement in the limbs. It is a physical immaturity of an organ, the brain no less, which prevents the child from moving purposefully except in limited conditions. These limited conditions, along with the physical immaturity which sets them, are both natural to and appropriate for the infant. Neither would children have had perfect use of reason in the state of innocence, because of the immature state of organs of sense: the brain is not yet dry. In other words, they do not sense well, so they also cannot reason well, and are similarly hindered in the use of any other powers proper to the rational soul. Thomas believes that human beings are born rationally ensouled, and he believes that

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<sup>52</sup> *Summa Theologica* Ia.99.1.

<sup>53</sup> *Ibid.*, Ia.99.1.

they are likewise born with organs of sense which are not yet fully formed, and will not be for some time. But this is just precisely what would be impossible for Thomas to believe if Pasnau were right about Thomas' minimal standard for rational ensoulment. Thus there is no particular reason that Thomas would not find a more rudimentary iteration of organs sufficient for rational ensoulment.

All of this is in addition to the problem of the striking lack of sense experience in the womb to give rise to phantasms in the embryo. If pressed, one could perhaps say that the embryo sensed warmth and a certain quality of wetness around itself, and a quality of hardness at some particular remove from its own body. But intellectual knowledge depends upon many, many phantasms, and it is from these individual experiences that the active intellect abstracts the intelligible species. What could the embryo make of its experience, when it does not vary? To what softness could it compare hardness, and learn that they are different qualities? To what dryness could it compare wetness? To what light could it compare the darkness in the womb?<sup>54</sup> The embryo may know itself in some way, but what other self is there in the womb that it may know itself as an individual such-and-such, as distinct from that individual of the same species? Perhaps if it has a twin, but this is an exception and not the rule.

Returning to Pasnau, it is very difficult to understand why he associates the first iteration of a particular part of the brain at twenty weeks gestation with the appearance of mind, especially when Thomas describes an extended period in infancy during which one cannot readily say that the child manifests 'mind' in the sense of will and intellect. In Thomas' embryology, the embryo acquires a sensitive soul long before the organs of

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<sup>54</sup> It is true that we now know that the embryo does in fact experience and respond to the subtle differences in light, sound, texture, and taste of its life in the womb. This is not something that Thomas could have imagined, however, and even though it does occur, it is in a very subtle and minimal way.

sense are completely formed and disposed. We can know this because he describes the *rationally* ensouled infant as still possessing physically immature organs of sense.

Therefore, it is not clear how we should believe that Thomas thought the rational soul could only be infused in a body with fully formed organs, since that requirement is not met before the advent of the previous form. Nevertheless, it seems “very plausible” to Pasnau “to suppose that the mind of a fetus is active before birth, and that Aquinas himself thought as much.”<sup>55</sup> Perhaps he has conflated the ability of the sensitive soul to respond to its environment with the sort of intellectual function proper to the rational soul; in the case of the human embryo this is perhaps even easier to do, since Thomas believes even the sensitive soul of man is of a greater magnitude than the sensitive soul of an animal. However, that is not ‘mind’. As Thomas is fond of reminding us, “[i]n all things produced by generation nature proceeds from the imperfect to the perfect.”<sup>56</sup> What we should note in these descriptions is that he seems quite comfortable describing babies and children as not quite finished. There is a deep sense of continuity within the embryo in all its formations as always oriented toward its perfection. So too, are infants and children, though they already have the rational soul.

### **Man as Generated, not Created**

Moreover, Thomas in this passage refers to children as the *products of generation*. In a very real sense, *they* are what is generated, and not a natural animal body supernaturally transformed by God into a human being upon the creation and infusion of the rational soul. For this is the alternative: if the embryo is really a plant, and then really

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<sup>55</sup> Pasnau, *Souls and the Beginning of Life*, 529.

<sup>56</sup> *Summa Theologica* Ia.101.2.

an animal, each human being is miraculously brought into being by God's action in creating the rational soul. Moreover, this infusion and transformation is opposed to the embryo's original nature as an animal, and that animal nature is opposed to the plant nature it had been before that. Both are opposed to the human-specific movement of the father's sperm in forming them in such a way as to push past each form by bringing the next into existence in the matter. For the good of the animal is proper to the animal, and the good of man to man. The good of the animal cannot be to cease being what it is. That is an empty nature, to be sure. On the other hand, if the embryo *is already* human, it is possible to speak of the human as really generated, at least as to the animal nature properly belonging to it as human. Thomas thought that "[m]an naturally begets a *specific* likeness to himself. Hence whatever accidental qualities result from the nature of the species, must be alike in parent and child."<sup>57</sup> But what the child has from his father is not his soul, but his body as disposed to the rational soul, and also his (human) animal nature. Elsewhere, he writes that "a man begets his like in species, in so far as the seminal virtue in him operates dispositively towards the ultimate form whence man derives his species."<sup>58</sup> This is further confirmed in a passage depicting Mary as giving Christ the human species, though not his human form: "Christ was conceived of the Virgin Mary, who supplied the matter of His conception unto likeness of species."<sup>59</sup> Therefore, what is generated is an individual of the human species. Even though the rational soul does not come to the embryo by the agency of the parents, its parents, separately and together, give the embryo its species.

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<sup>57</sup> *Ibid.*, Ia.100.1. Incidentally, this is how Thomas accounts for genetic inheritance and family traits.

<sup>58</sup> *Summa Contra Gentiles* 2.89.

<sup>59</sup> *Summa Theologica* III.32.2.



We have so far explored passages in which Thomas seems to treat the embryo as human, as having human nature, and as having the human species, even before the rational soul. There is no shortage of texts which seem to disallow this option, and yet that he writes of the embryo this way cannot be an aberration or an accident, given the depth and breadth of such passages in evidence. It seems to me that there is instead a tension within his work toward which he has not directed his full attention. Though he might have asked himself what sort of being the embryo has or is and worked out the implications of his answer systematically with regard to the many potential conflicts, he has not done so. We can only follow the contours of his thought, highlighting likely avenues, and hint, on his behalf, at the resolution he *might* have found, had he done so.

*“There is a considerable difficulty in understanding how the plant is formed out of the seed or any animal out of the semen.”*  
-Aristotle<sup>1</sup>

## Chapter 8: Final End, Nature, and the Meanings of Generation

Thus far, while we have identified sufficient passages within Thomas’ work to lend credence to our finding that the only option open to him is to identify the embryo as already human, we have not been able to resolve the tension between accounts which depict the embryo as passive under the formative power in the father’s semen, and accounts which hint at the ability of the embryo to form itself in some way. There is an added impetus in resolving this tension from where we stand, looking back at Thomas with our added knowledge about the embryo’s development. A number of concepts important to both Thomas and Aristotle may help us not only to identify and speak of ways in which the embryo is human, but also in some measure to resolve the tension regarding the proper attribution of the activity which disposes the embryo to receive the rational soul.

If it is difficult to identify what sort of thing the embryo is, Aristotle would suggest we begin at the *end*. The final cause is the fourth of Aristotle’s causes, the “for the sake of which.”<sup>2</sup> He and Thomas are equally convinced that any substance, any thing, is only understandable in terms of its end: “for the definition and the final cause are the same.”<sup>3</sup> This is particularly clear with regard to generation. If we wish to understand

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<sup>1</sup> *Generation of Animals* II.1.733b24-25.

<sup>2</sup> *Ibid.*, I.1.715a4.

<sup>3</sup> *Ibid.*, I.1.715a8-9.

animals, Aristotle insists that we give final cause preferment.<sup>4</sup> For Aristotle, nature subsumes the pieces to the whole and the process to the goal. The embryo exists for the fetus, the fetus for the baby, the baby for the child, and all exist for the sake of the adult; just so the foundation, walls, and roof exist for the sake of the house which is being built. It is the house that makes them necessary, and not the other way around.<sup>5</sup> “For in house building too, these things come about because the form of the house is such and such, rather than its being the case that the house is such and such because it comes about thus. For the generation is for the sake of the substance and not this for the sake of the generation.”<sup>6</sup> The best way to understand animals, and to understand their generation, is in terms of what is generated.

A simple illustration will suffice: we notice this rule when putting together puzzles. If we dump out a box of a thousand intricate pieces, and attempt to put them together without reference to the picture they are making, we frustrate ourselves to no purpose. The pieces begin to make sense only in the context of the piece next to them, and the next piece, etc., and finally it all makes sense when we see how the pieces fit together to make the whole. The data on the embryo is like that. All life cycles are like that. If we did not know that the baby outside the womb will no longer receive oxygen through its umbilical cord we might not understand the action of its lungs in taking in and then expelling amniotic fluid, over and over again, as a sort of “practice” breathing. We do know that, however, and the development of that life, from its beginning as a zygote through each successive stage, is intelligible to us because we anticipate its maturity.

Aristotle puts it this way: “In order of time, then, the material and the generative process

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<sup>4</sup> *Parts of Animals* I.1.639b.

<sup>5</sup> *Ibid.*, I.1.640a1-11.

<sup>6</sup> *Ibid.*, I.1.640a17-19.

must necessarily be anterior; but in logical order the substance and form of each being precedes the material. This is evident if one only tries to define the process of formation.”<sup>7</sup>

It is a basic tenet of his metaphysics that we should *expect* that the development of the embryo would be a conundrum when considered apart from what it is becoming. You might say that it would upset Aristotle’s understanding of the world if the embryo made sense in itself. Ironically, we may take it as confirmation of his larger philosophical structure rather than a possible threat to it that we have so much difficulty parsing out what exactly an embryo is. Its several stages of development *should not* make sense except in light of its final end.

Thomas is similarly eloquent on the subject. He writes of the final cause that it

...causes the matter to be the matter and the form to be the form, since matter receives the form only for the sake of the end and the form perfects the matter only through the end. Therefore we say that the end is the cause of causes, because it is the cause of the causality in all causes.<sup>8</sup>

Like Aristotle, he distinguishes between the order of ontological perfection, which he identifies with Creation, and the order of nature, as it proceeds in generation through time, noting that they are inverse to each other.<sup>9</sup> In the order of generation, the child, and not the adult, comes first, but when one considers humanity from the order of creation, God created man as an adult, not as a child.<sup>10</sup> Thus, from the standpoint of perfection, of fulfillment—of final end—the adult is the exemplar of the human species, and everything else in that species is to be understood in terms of its relation to that end.

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<sup>7</sup> *Ibid.*, II.1.646b1-3. See also *Ibid.*, II.1.646a25-28.

<sup>8</sup> *An Introduction to the Philosophy of Nature* 29.

<sup>9</sup> *Summa Theologica* I.94.3. See also Thomas Aquinas, *An Introduction to the Philosophy of Nature* 31.

<sup>10</sup> Étienne Gilson, *From Aristotle to Darwin and Back Again: A Journey in Final Causality, Species, and Evolution*, translated by John Lyon (San Francisco: Ignatius Press, 1984), 39. Gilson also notes a similar preference in Aristotle to first describe mature animals, and only then their formation, connecting this preference explicitly to Aristotle’s teleology.

It is because we know the embryo's species that we can make sense of it in its earliest manifestations. We cannot, for example even speak of just an "embryo". We must specify: of which species? And certainly, the priority of the rational soul has never been in doubt in the debate about the embryo. So far, the fact that we can only understand the embryo in terms of its kind does not thereby establish that that the embryo is already the same substance as the mature human being. That they are closely linked has never been in doubt. What has been contended fiercely, however, is what that link *means* for the embryo. Moraczewski, a staunch proponent of immediate animation, insists that

...it should not be overlooked that the most basic and revealing act of what a living thing is, is precisely what it becomes in its mature stage. A caterpillar does not fully reveal its nature until it becomes a butterfly or moth. A caterpillar is one developmental stage (larvae) of the same creature that later manifests itself as a butterfly or moth. Among living beings the earlier stages of development may, in outward appearance, be very different than the mature stage. Yet it is one and the same individual who has traversed various stages to reach maturity.<sup>11</sup>

The key, it seems, is that it must be the individual subject which is the agent of change from within. If it is the same subject which makes the changes, surely the same subject must endure throughout the changes. Generally, however, Thomas has been interpreted as viewing the embryo as passive under the agency of the father's formative power, and as being in potency to, and in total privation of, its proper form, the rational soul. These are entirely extrinsic forces. The father's seed cannot work on the embryo from inside, as it were, or combine with it; that would be to view generation as an illusion. We would all be mere extensions of Adam and Eve, in that case, and not our own, truly individual selves. On the other hand, the rational soul is precisely what the embryo does not yet and cannot yet have. Thus, the impasse.

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<sup>11</sup> *Personhood: Entry and Exit*, 80.

## Nature as Internal

For Aristotle, “finality is within nature; it is part of the natural process.”<sup>12</sup> He goes so far as to identify nature as an animal’s first principle: by it, the animal is what it is.<sup>13</sup> In a passage in his *Metaphysics* he considers a number of different things that might be called nature, and comes to the conclusion that

nature in the primary and strict sense is the substance of things which have in themselves, as such, a source of movement; for the matter is called the nature because it is qualified to receive this, and processes of becoming and growing are called nature because they are movements proceeding from this.<sup>14</sup>

Thomas also thinks of nature as an internal cause which brings about the end. In the context of a passage on the nativity of Christ, Thomas waxes poetic on the many meanings of ‘nature’, and of the origin of the concept of nature. In Latin, at least,

...the word *nature* comes from nativity. Hence this word was used first of all to signify the begetting of living beings, which is called *birth* or *sprouting forth*, the word *natura* meaning, as it were, *nascitura*. Afterwards this word *nature* was taken to signify the principle of this begetting; and because in living things the principle of generation is an intrinsic principle, this word *nature* was further employed to signify any intrinsic principle of motion: thus the Philosopher says (Phys. II) that *nature is the principle of motion in that in which it is essentially and not accidentally*. Now this principle is either form or matter. Hence sometimes form is called nature, and sometimes matter. And because the end of natural generation, in that which is generated, is the essence of the species, which the definition signifies, this essence of the species is called the *nature*. And thus Boethius defines nature (*De Duab. Nat.*): *Nature is what informs a thing with its specific difference*—i.e. which perfects the specific definition.<sup>15</sup>

He traces the very concept of something having a nature to the process of generation, in which the progenitor engenders offspring of the same kind as himself.

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<sup>12</sup> D. M. Balme, “Teleology and Necessity,” in *Philosophical Issues in Aristotle’s Biology*, edited by Allan Gotthelf and James G. Lennox, (Cambridge: Cambridge University Press, 1987), 275.

<sup>13</sup> *Parts of Animals* I.1.642a17.

<sup>14</sup> *Metaphysics* V.4.1015a13-17.

<sup>15</sup> *Summa Theologica* IIIa.2.1. Emphasis original.

Nature works in a particular way. Parts come to be, and come to be in a certain manner and order, for the sake of the mature organism, and for the specific good of that organism: “the parts of natural organisms develop because of the good ends they serve.”<sup>16</sup> Gilson writes that Aristotle’s nature “does not build up plants or animals out of organs; [it] makes organs in the process of producing animals and plants.”<sup>17</sup> Aristotle speaks of nature as operating like an artist, if an artist did not deliberate or act impetuously, but always perfectly toward one end.<sup>18</sup> Gilson thinks that it is art which is the poor imitation of nature, for “[w]hat strikes Aristotle in comparing art and nature is precisely that, unlike art, nature does not calculate, reflect, or choose...driven from within toward an end of which she is ignorant but which she carries about in her, nature does nothing in vain.”<sup>19</sup>

Aristotle’s favored analogy of the sculptor and the bronze statue is often employed by way of explaining the way the formation of the embryo. The father is like the artist, or so the story goes. But this is to take art and not nature as the model for the embryo.<sup>20</sup> Nature, Aristotle says, is like “a doctor doctoring himself.”<sup>21</sup> No one contests that for both Aristotle and Thomas nature works within the formative power of the father’s seed, but we have yet to locate a way in which Aristotle writes about the embryo as having within itself an internal principle of change or movement. Likewise, it is clear

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<sup>16</sup> Susan Sauve Meyer, “Aristotle, Teleology, and Reduction,” *The Philosophical Review*, 101.4 (October 1992), 791.

<sup>17</sup> *Journey in Final Causality*, 114.

<sup>18</sup> *Physics* II.199b18-28.

<sup>19</sup> *Journey in Final Causality*, 114.

<sup>20</sup> Jason Eberl argues that for Aristotle, a natural substance must operate according to the model of nature and not of art. He therefore locates both the formal cause and the efficient cause within the embryo. *Human Embryogenesis*, 391. Beverly Whelton links Aristotle’s notion of nature as an internal principle to the activation of the zygote’s DNA. “Human Nature, Substantial Change, and Modern Science: Rethinking When a New Human Life Begins” *Proceedings of the American Catholic Philosophical Association* 72.1 (1998).

<sup>21</sup> *Physics* II.8.199b30.

that Thomas believes the embryo has a nature, but it is not clear what he believes that nature might do within the embryo above mere vital operations.

### **The “Heart” of the Matter**

We have noticed that the tension between tasking an internal as opposed to an external force with shaping the embryo is at the bottom of many of the arguments about when the embryo is human. Some have attributed all action to the embryo. Others highlight Aristotle’s view of the formative power in the father’s semen as the extrinsic efficient cause of the embryo, and point to passages in which he describes its effect in setting the menstrual blood and in bringing the parts latent in it to act. Other positions are particularly vulnerable at precisely this point: what is responsible for the formation of the embryo, and of its requisite parts? If not the father’s soul working through the vital heat and *pneuma* in the semen, then what, in the context of Aristotle’s embryology, can be responsible for the development of the embryo before the rational soul? In the context of modern embryology, what can order and govern the successive cleavages in the zygote in such a way that the blastomeres go on to rearrange themselves into layers distinguished by the sort of cells they will become? The question boils down to this: can a substance survive as the continual and identical subject of real development, or does such innovative development entail the generation of a new substance? Since de Dorlodot first made such impassioned claims about Thomas’ embryology, the debate about the embryo has constantly revolved around this difficulty.

It is surprising, therefore, that such scant attention has been paid to certain other passages in the *Generation of Animals* which offer a clear description of the embryo as



both generated by another before it has a soul, and as forming itself, after it has a soul. In a passage towards the end of the fourth section of the second book, Aristotle describes the origin of the embryo this way:

When the embryo is once formed, it acts like the seeds of plants. For seeds also contain the first principle of growth in themselves, and when this (which previously exists in them only potentially) has been differentiated, the shoot and the root are sent off from it, and it is by the root the plant gets nourishment; for it needs growth. So also in the embryo all the parts exist potentially in a way, but the first principle is furthest on the road to realization. Therefore the heart is first differentiated in actuality. This is clear not only to the senses (for it is so) but also on theoretical grounds. For whenever the young animal has been separated from both parents it must be able to manage itself, like a son who has set up house away from his father. Hence it must have a first principle from which comes the ordering of the body at a later stage also, for if it is to come in from outside at a later period to dwell in it, not only may the question be asked at what time it is to do so, but also we may object that, when each of the parts is separating from the rest, it is necessary that this principle should exist first from which comes growth and movement to the other parts... Therefore it is that the heart appears first distinctly marked off in all the sanguinea, for this is the first principle of both homogeneous and heterogeneous parts, since from the moment that the animal or organism needs nourishment, from that moment does this deserve to be called its principle. For that which exists grows, and the nutriment, in its final stage, of an animal is the blood or its analogue... and that is why the heart is the principle of these also.

Since the embryo is already potentially an animal but an imperfect one, it must obtain its nourishment from elsewhere; accordingly it makes use of the uterus and the mother, as a plant does of the earth, to get nourishment, until it is perfected to the point of being now an animal potentially locomotive.<sup>22</sup>

The embryo is formed in the sense that the semen has “fixed” the menstrual blood, solidifying a mass, and then with its movement, its vital heat and the bubbly, frothy action of the pneuma, it wakes a first organ, the heart, from the potency – we might say *totipotency* – of the mother’s blood. At this point, the embryo is formed in that it is now actually an organic body having life potentially.<sup>23</sup> Also at this point, it is like the seed of a plant, “for seeds also contain the first principle of growth in themselves.” The first

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<sup>22</sup> 739b34-740a28.

<sup>23</sup> Aristotle, *On the Soul* II.1.412a28.

principle of growth must be “differentiated” in the embryo by the formative power of the semen; it cannot give itself this principle.

Up until this point, the solid mass of congealed blood is entirely homogenous. While the blood, as highly concocted, is well disposed to becoming any body part whatsoever, and even contains within itself all human parts potentially, it is still in itself homogeneous. All of this changes when the formative power brings the heart into actuality. Finally, it is differentiated. Aristotle identifies this first part as the “first principle of both homogeneous and heterogeneous parts.”<sup>24</sup> The embryo now exists as such, because it has the ability to grow: it has a nutritive soul. This internal part is first differentiated, and it is only after the heart is formed in this way, and after it has the nutritive soul, that its other parts are formed. Aristotle explains it this way: “it is necessary that this principle should exist first from which comes growth and movement to the other parts.”<sup>25</sup> This movement is the movement whereby the parts already existing in potency in the blood, now converted into the new substance of the embryo, are brought into act. In this passage, Aristotle identifies the heart as making the other parts to be in actuality where they had only existed potentially. The heart’s operations are operations internal to the embryo, and not due directly to the father’s formative power.

Mary Louise Gill, in analyzing this and surrounding passages, distinguishes between what she views as generation proper, that is, the progenitor brings suitable matter into act with the result of a new individual of the same nature; and what she calls

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<sup>24</sup> *Generation of Animals* II.4.740a19.

<sup>25</sup> *Ibid.*, II.4.740a12.

“self-generation,” which “is caused by an entity’s own active principle.”<sup>26</sup> It is worth noting that when Aristotle has described the different parts which are formed in the embryo of man and of different species of animal, and in what order and in what way, he summarizes his subject as a matter of stating “how each of the parts is formed and what is the cause of their *generation*.”<sup>27</sup> He cannot mean generation in the sense of *new substance* as he is speaking merely of parts. Moreover, given that the parts of the embryo are formed out of the blood, which is simply well-concocted nutriment, and the nutritive soul is the power which changes the nutriment into its body; it is not surprising that this same soul, once the embryo was brought into existence, would be able to use its nutritive power to add bulk not only to already existing parts, but also to make new parts.

Just beyond the passage quoted at length above, Aristotle tells us that the embryo, because of its nutritive soul, “straightway sends off this [umbilical] cord like a root to the uterus.”<sup>28</sup> To make this quite clear: Aristotle believes the embryo is responsible for taking some of its own substance and making of it the cord it will need to obtain nutrition from the mother, just like a plant grows roots and sends them out into the soil to draw up nutrients. This cord not only does not pre-exist in the embryo as a result of the motion of the formative power of the semen, but is in itself a new and heterogenous part made by the nutritive power of the embryo’s own soul. It is complex, formed of numerous blood vessels enclosed in a sheath, and this structure can also vary by species in that other

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<sup>26</sup> Mary Louise Gill, *Aristotle on Substance: The Paradox of Unity*, (Princeton, NJ: Princeton University Press, 1989), 230. I am grateful to her for cementing my view of the embryo and helping me to read these passages with new eyes.

<sup>27</sup> *Generation of Animals* II.6.745b20. Emphasis added.

<sup>28</sup> *Ibid.*, II.4.745b23-35.

species have fewer blood vessels in this cord.<sup>29</sup> This is only the first step of the process whereby the embryo, by an internal principle, “grows and approaches perfection.”<sup>30</sup>

This view of the embryo is confirmed in an earlier passage of *Generation of Animals*, in which Aristotle casts the distinction in terms of potentiality:

...a thing existing potentially may be nearer or further from its realization in actuality, just as a sleeping geometer is further away than one awake and the latter than one actually studying. Accordingly it is not any part that is the cause of the soul’s coming into being, but it is the first moving cause from outside. (For nothing generates itself, though when it has come into being it thenceforward increases itself.) Hence it is that only one part comes into being first and not all of them together. But that must first come into being which has a principle of increase (for this nutritive power exists in all alike, whether animals or plants, and this is the same as the power that enables an animal or plant to generate another like itself, that being the function of them all if naturally perfect). And this is necessary for the reason that whenever a living thing is produced it must grow. It is produced, then, by something else of the same name, as e.g. man is produced by man, but it is increased by means of itself. There is, then, something which increases it. If this is a single part, this must come into being first. Therefore if the heart is first made in some animals, and what is analogous to the heart in the others which have no heart, it is from this or its analogue that the first principle of movement would arise.<sup>31</sup>

In this passage, the embryo is described as not in any way responsible for its generation, but “when it has come into being it thenceforward increases itself.” In this way, in actualizing its parts, it is actualizing its own potential, as well. The heart is again identified as the source of this ability within the embryo. Aristotle links the two powers of the nutritive soul closely, noting that they are both essential for generation. Without the one, the progenitor could not produce a new being; without the other, that new being would not “increase” or have within itself the all-important first principle of movement.

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<sup>29</sup> *Ibid.*, II.7.745b25-34. Modern scholars concerned about the status of the embryo should note that it does not trouble Aristotle that among the first organs the embryo grows for itself is what they would consider an *extraembryonic* part.

<sup>30</sup> *Ibid.*, II.7.745b34.

<sup>31</sup> *Ibid.*, II.1.735a10-28.

Here, finally is a possible resolution to the two seemingly conflicting ideas about the embryo. In that it was made out of the mother's menstrual blood by the power in the semen and its heart was differentiated from the otherwise simple mass of its body, it was generated by the father, and has its being by the father's agency. In that it is able, upon having a heart and so its own principle of nutrition and growth, not only to show that it is alive by manifesting the powers of a nutritive soul, but also to further differentiate out of its own substance the parts necessary for its immediate continuation of existence as well as those which it will need at later stages, *it generates itself*. Aristotle has accounted for both a real generation of a new substance and a real internal ability to develop.<sup>32</sup> The first is a true substantial generation, the second is the manifestation of the life proper to an immature organism. In this way, Aristotle identifies nature as a principle of motion and change within the embryo. The embryo's nature is indeed like a "doctor doctoring himself."<sup>33</sup>

A survey of his work reveals that Thomas, too, writes about the nutritive power of an individual as being a kind of generation within the same individual: "the power of generating their like in the individual...which power in living bodies is the nutritive power."<sup>34</sup> It is by this power that food is changed into the body's "true nature." A few lines down he notes that "the *nutritive humor* is that which has not yet received perfectly the specific nature, but is on the way thereto; such is the blood, and the like." Though he has not made the connection explicit, it may be possible in light of this passage to understand the congealed blood that is the body of the fetus in such a way, as something

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<sup>32</sup> Thomas Kjelle Johansen, *The Powers of Aristotle's Soul*, (Oxford, U.K.: Oxford University Press, 2012), 141.

<sup>33</sup> *Physics* II.8.199b30.

<sup>34</sup> *Summa Theologica* Ia.119.1.

which has “not yet received perfectly the specific nature, but is on the way thereto.” In that same article, when Thomas writes that “by the seminal power a certain matter truly assumes the form of human nature, much more can the soul, by the nutritive power, imprint the true form of human nature on the food which is assimilated” he is referring more generally to nutrition, but the point still stands. If what the seminal power has done in setting the menstrual blood, separating out the solids into a defined mass, and then bringing the heart into being has given the embryo a human nature, that embryo, by its nutritive power, can convert the blood (which is simply the last step before food is transformed into the body proper) into the human body parts that it is quite ready to become.

Similarly, but this time within the context of generation, Thomas mentions that living bodies generate their like not only in another, but in themselves:

living bodies...act so as to generate their like, both without and with a medium. Without a medium—in the work of nutrition, in which flesh generates flesh: with a medium—in the act of generation, because the semen of the animal or plant derives a certain active force from the soul of the generator, just as the instrument derives a certain motive power from the principal agent.<sup>35</sup>

In another place, he puts the same idea another way: “human nature has a virtue for the communication of its form to alien matter not only in another, but also in its own subject.”<sup>36</sup> Likewise, he notes of the embryo in the womb, “that which is nourished assimilates nourishment: wherefore in the subject nourished there must needs be an active nutritive power, since the agent produces its like.”<sup>37</sup> Thomas even uses the generation of an embryo as an example to explain the gradual way that food is converted into flesh.<sup>38</sup>

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<sup>35</sup> *Ibid.*, Ia.118.1.

<sup>36</sup> *Ibid.*, Ia.119.2.

<sup>37</sup> *Summa Contra Gentiles* 2.89.

<sup>38</sup> *Summa Theologica* Ia.119.2.

Because the embryo has a human nature, its actions in generating itself – that is, in employing the nutritive power proper to its nutritive soul to reduce the congealed blood from potentiality to all human parts to each part in particular as appropriate – make its body to be more and more well-disposed for the rational soul. If it were the nutritive faculty of an actual plant, the embryo would be differentiated into roots, shoots, and leaves rather than umbilical cord, primitive streak, and arm buds. That it does not but instead generates the blood into the parts of its own human body reveals that it is already inescapably human. It is the nutritive power of a human being at work here, evidenced by the fact that the organs which are formed by the nutritive process of converting nutriment are specifically human. Aristotle likes to say that nature works either according to necessity or because it “would be better so.” It works for “the good” or “the better.” Nature does not make a plant so that it may make an animal so that it may make a man. It can be no good *for* the plant or *for* the animal that something else will benefit from a nicely developed body. As Thomas remarks, “everything naturally aspires to existence after its own manner.”<sup>39</sup> The nature in question is not of plants or animals, but of the *human* embryo, which is continuously existing, though it exists as first plant-like and then animal-like. Even though the rational soul that this embryo will have does not yet exist, the embryo’s active disposition to it does exist, as does the nature it received from its parents.

In the previous chapter we noted a discrepancy between different passages in Thomas’ work regarding the duration and extent of the father’s agency in disposing the embryo. In some passages, Thomas makes it quite clear that it is the father who is

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<sup>39</sup> *Ibid.*, Ia.75.5.

responsible for the succession of souls in the embryo. It is the father who disposes the matter, and not the embryo itself by the powers of its own soul.

...the work of the generative power is directed, not to the perfection of the individual, but to the preservation of the species. Nor again can it be ascribed to the nutritive power, the work of which is to assimilate nourishment to the subject nourished, which is not apparent here; since in the process of formation the nourishment is not assimilated to something already existing, but is advanced to a more perfect form and more approaching to a likeness to the father. Likewise neither can [the formation of the body] be ascribed to the augmentative power: since it belongs to this power to cause a change, not of form, but of quantity. As to the sensitive and intellective part, it is clear that it has no operation appropriate to such a formation. It remains then that the formation of the body, especially as regards the foremost and principal parts, is not from the form of the subject generated, nor from a formative power acting by virtue of that form, but from (a formative power) acting by virtue of the generative soul of the father, the work of which soul is to produce the specific like of the generator.<sup>40</sup>

He considers each power the embryo might manifest; none of them is suited, he believes, to disposing the embryo's matter for the sensitive soul, much less the rational soul.

Thomas rejects Aristotle's view of nourishment as the power in the embryo which allows it to convert its mass into new parts. For Thomas, this power is one suited for assimilating nutriment to what already exists, and not to actualizing the potential of matter towards the perfection of a greater form. However, his rejection seems accidental, as if he were unaware that Aristotle had employed the nutritive power in just that way.

In another passage, Thomas limits the formative power of the father's semen in a striking way, and at the same time, assigns further activity in that vein to the sensitive soul of the embryo.

And after the sensitive soul, by the power of the active principle in the semen, has been produced in one of the principal parts of the thing generated then it is that the sensitive soul of the offspring *begins to work towards the perfection of its own body*, by nourishment and growth.<sup>41</sup>

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<sup>40</sup> *Summa Contra Gentiles* 2.89.

<sup>41</sup> *Summa Theologica* I.118.1. Emphasis added.



From his choice of words, it is clear that Thomas is reading the very passage in *Generation of Animals* in which Aristotle indicates that once the heart is formed, the embryo is responsible for the perfection of its own matter. Note that Thomas is referring to the heart when he says that the sensitive soul “has been produced in one of the principle parts of the thing generated.” It seems that he has interpreted Aristotle as holding that it is the *sensitive* soul which the embryo has when the heart is formed by the motion of the father’s formative power.

What can Thomas mean by this passage? A clue may lie in the very last sentence of the article. Regarding the seminal power, he notes that “the movement of an instrument ceases when once the effect has been produced.” The effect produced, however, is not the embryo as formed by the rational soul, but as formed by the sensitive soul. That is, it is formed as to its animal nature, in that man is a kind of animal, but Thomas also ascribes to the embryo the ability to further perfect itself. He specifies in what way it will perfect itself: nourishment and growth. Now, nourishment and growth are a kind of generation, in that the nutriment taken in by the embryo through the umbilical cord must be converted into its flesh. It is unclear, however, what perfecting remains to be done by the embryo between the realization of the sensitive soul and the infusion of the rational soul. Thomas may imagine that there is some further differentiation of organs necessary, perhaps. It seems that real perfection of the embryo towards the rational soul cannot be a matter of simple growth. If nothing else, this ambivalence reveals that Thomas had begun to work out the possibility that the embryo is responsible for at least some of the differentiation needed to properly dispose the body for the rational soul.

It seems that Thomas was aware of this passage in *Generation of Animals*, and to some extent he began to work out the implications of the general concept of the nutritive power as directed to itself, but he does not apply it consistently to the embryo. That we have an example of him beginning to do so sheds some light on the discrepancy in his work between different passages on the role of the semen in disposing the embryo. It seems that, though he was aware of this principle in Aristotle's biology, he may have come to it late, as it were, and perhaps not fully integrated it with his thought on the embryo. This is not particularly surprising, because a number of similar passages in Aristotle do not explicitly distinguish between different kinds of generation. Therefore we have in Thomas an enduring conflict between the idea of generation simply and the internal disposing of nature towards the end. It is this, I believe, which is responsible for the gap between the way he writes about the embryo as already human, and the way he ascribes all of the development of the embryo to the father's agency, even though the embryo is alive and functioning. Secondary literature on the subject is rife with the idea that if only Thomas had realized that the embryo, once it comes into being, essentially makes itself into the adult human being it becomes, he would have done away with the succession of souls and identified it as having the rational soul immediately. That may be; I am not convinced. However, I do think that, if only Thomas had fully worked out Aristotle's view of the embryo as self-making once it is brought into being, he might have had an easier time accounting for its continuity. For nature is an internal cause. It operates from within. Rather than merely a passive, unknowable subject of multiple generations, the embryo in this view is actively working out its potential for the rational soul by its own power and according to its own nature. It is oriented, not from without in

the sense that one day it will have its proper form, but from within in the sense that, as human already, it desires the good proper to it: the rational soul.

In a related vein, there are a few tantalizing passages which hint at yet another kind of generation, or at least a modification of the way Thomas generally uses the term. If the many generations and corruptions of the embryo with regard to the succession of souls is problematic, this revision of Thomas' understanding of generation may be helpful in establishing the embryo as an individual. He writes that form

... is of two kinds: one is perfect and completes the species of a natural thing, as in the case of the form of fire or water or man or plant; the other is an incomplete form which neither perfects any natural species nor is the end of the intention of nature, but is something on the road to generation and corruption. For it is plain in the generation of composites, for example, of an animal, that between the principle of generation, which is the seed, and the ultimate form of the complete animal, there are many *intermediate generations* (as Avicenna says in his *Sufficiency*) which have to be terminated to certain forms, none of which makes the being complete in species, but rather an incomplete being which is the road to a certain species.<sup>42</sup>

In this passage Thomas expounds a view of the embryo as continuous through a number of incomplete stages on the way to attaining the form which completes its nature.

Similarly, in another work he refers to the coming of the rational soul to the embryo, which already "has some form." He says this takes place "through a kind of generation."

There are many of these sorts of generations on the way to the final form.<sup>43</sup>

It is passages like these which Amerini has in mind when he grants the possibility that

[t]he process of generation, though it implies changes of species in the embryo, does not imply changes of *perfect* species. It is a matter of potential changes,

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<sup>42</sup> *Philosophy of Nature* 8.60. Emphasis added.

<sup>43</sup> *On Spiritual Creatures* 3.

describable in terms of the perfecting of one final form that, retroactively, regulates and directs the process.<sup>44</sup>

In his assessment, “the embryo can become a human being because it is becoming a human being.”<sup>45</sup> I think that Thomas can and does say more. It is more accurate to say that for Thomas, the embryo is becoming a human being because it already is a human being. Whereas Amerini identifies the final cause as extrinsic to the embryo, for Aristotle and for Thomas it is appropriate to say that the final cause is also within the embryo, actively disposing itself according to its nature and out of the desire to actualize the specific good of that nature. As Aristotle writes,

when we are dealing with definite and ordered products of Nature, we must not say each is of a certain quality because it becomes so, but rather that they become so and so because they are so and so, for the process of becoming or development attends upon being and is for the sake of being, not vice versa.<sup>46</sup>

The embryo as understood by Aristotle and by Thomas is certainly a definite and ordered product of nature, and so becomes human because it is human.

### **Distinguishing Between Different Meanings of *Generation***

We have identified three kinds of generation in Aristotle, and if somewhat more tentatively, in Thomas, as well:

- 1.) The first is what we might call *generation simply*. This is the most basic sense of generation: the father generates the offspring, with the result that there is a new being of the same kind in existence.
- 2.) The second kind of generation, and the one that Thomas has not fully and consistently adopted, is generation as directed towards the *self*, either by

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<sup>44</sup> *Beginning and End*, 125.

<sup>45</sup> *Ibid.*, 171.

<sup>46</sup> *On the Generation of Animals*, 778b.

converting food into existing parts of the body, or by converting the blood which makes up the embryonic body into the organs necessary for the perfection of the higher forms, and finally, to dispose the body for receiving the rational form.

- 3.) The third sense of generation is, to borrow Thomas' phrase, an *intermediate generation*. This refers to generations of incomplete forms within the offspring, on its way to the final and proper form. This is less easy to locate in Aristotle, though it may be inferred from the way he clearly distinguishes between what the father does in generating the embryo, and what the embryo does in perfecting itself.

It is the first sense which I take to be the primary meaning of the term for both Thomas and Aristotle. The second sense, as applied to the problem of the embryo, might have enabled Thomas to identify the embryo as the agent of the changes it undergoes, and thus as manifesting a life that is already from the beginning a decidedly *human* life. The third sense, that of the successive generations within embryogenesis, borrows its intelligibility from the proper, more basic sense of generation as a matter of nature continuing through the lives of successive individuals of a species through reproduction. By assigning priority to the overarching process of generating rather than to the individual stages of embryogenesis, Thomas mitigates some of the difficulty in identifying the embryo as one continuous subject.

*“supposing a belated animation, there is still nothing less than a human life, preparing for and calling for a soul in which the nature received from parents is completed.”*  
 -Declaration on Abortion<sup>1</sup>

## Chapter 9: A Thomist Account of the Embryo

We have begun to be able to account for our findings in chapter 6, and for Thomas’ habit of writing about the embryo as if he believed it to be already human, even before the rational soul. It remains to work out those insights, in an effort to show what one could say about the embryo within the context of Thomas’ work, with the added help of concepts more fully implemented in Aristotle’s embryology. This addition is valid, I believe, given Thomas’ complete dependence upon Aristotle’s biology, and the discovery that Thomas partially appropriated the concept of nutrition as a generation of self.

From within a Thomist metaphysical structure, we may say of the embryo that it is human in at least the following ways:

- 1.) In regard to the nature it receives from the motion of the father’s seminal power and in the very matter of its body: the menstrual blood of the mother.
- 2.) In light of its end, to which it tends by an internal finality, in that God creates for it a rational soul, perfecting and completing the embryo as regards its form.

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<sup>1</sup> Sacred Congregation for the Doctrine of the Faith, *Declaration on Abortion*, (Washington D.C.: United States Catholic Conference, 1975), endnote 19, p. 13.

- 3.) In that it disposes itself, or at least cooperates in disposing itself, by converting the mainly heterogenous substance of its embryonic body into a more diversified body as to organs, perfectly disposed to receive the rational soul.

In his account of the embryo, Ford cautions that “[t]he teleological system of the blastocyst should not be identified with the ontological unity of the human individual that will develop from it.”<sup>2</sup> But of course it is that internal directedness, the *because of which*, that indicates the intelligibility of a product of nature for Aristotle, and for Thomas it is from this vantage that it becomes *possible* to understand the embryo. That the ontology of an early embryo presents itself as a philosophical problem is itself an indication of some intelligibility to be known. To correctly identify the blastocyst with its various processes aimed at human becoming is to have understood it as it is, not to have artificially isolated the mere fact of a phenomenon from the intelligibility of its actions. Moreover, to correctly ascribe to the embryo at every stage the agency of its development is to fully realize Thomas’ somewhat conflicting views on the embryo as already possessing a human nature.

We will attempt, then, to give an account of the embryo on Thomas’ behalf, fully aware that though some aspects of the view we have developed enjoy thorough support, other aspects are less secure. It is therefore a tentative and not an authoritative account. Nevertheless, because it recognizes both Thomas’ basic assumption as to the humanity of the embryo and also his account of its generation as being a matter of a succession of souls, it is more accurate than other accounts which lack one or the other aspect.

The father’s seminal power works in the mother’s menstrual blood like rennet in milk, separating the whey from the curd. The solid portion settles together, and due to the

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<sup>2</sup> *When Did I Begin?*, 158.

heat of the process, a membrane forms around it. This is not yet the generation of a human embryo, though Thomas and Aristotle sometimes speak of a generation of seed to blood. It is unclear that the substantial nature of either have changed, especially in light of their insistence that semen adds no material component to the embryonic body; that role is strictly reserved for the mother. In any case, it is a sort of necessary preamble to the coming to be of the offspring. When the heat and air in the semen has completely set the material, the species-specific motion of the formative power sets off a sort of reaction within the coagulated blood. In it are all the parts of a human being at any stage of development, but only in potency, because blood is that which will be converted into any and every part of the body in the course of development and growth. In potency, too, is the nutritive soul. The first thing that happens in this chain reaction (Aristotle's "automatic puppets") is the formation of the heart. As it is farthest away from actuality, it must be brought into act by the agency of another: the father, as working through the semen.<sup>3</sup> We may note that it is because the motion of the formative power is species specific that a heart is formed, rather than whatever is the corollary of 'heart' in plants or in what Aristotle calls the *less perfect* animals.

When the father effects this change in the coagulated mass, he wakes the nutritive soul slumbering in it, bringing it from potency to act. This is the generation of the embryo *simply*. The nutritive soul is located within the heart, as the heart is the first principle of growth and movement in animals, and the nutritive soul's powers are towards nutrition, growth, and generation. This soul comes from the potency of the mother's blood, which has a human nature. Thus this soul is the nutritive power appropriate to a human.

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<sup>3</sup> *Generation of Animals* II.5.740a5.



Likewise, it is just as much because of the character of the mother's blood that the formative power is able to actualize the species-appropriate organ within it.

If this is generation considered simply, it is far from a complete generation. The embryo has only a simple body with a single organ. It cannot continue to live in this way; it needs access to nourishment. So, as we have read in Aristotle, it sends out a sort of tap root in the precise way appropriate to its needs, to connect it to its mother, who supplies nutriment for further growth and development. The amount of nutriment – blood, that is – as yet undifferentiated within the embryo is relatively small, and insufficient for growth. In the same way, the embryo continues to convert nutriment, whether the remnant yet unconverted within its body or nutriment received from the mother, to organs and homogenous tissues. It builds for itself, at the appropriate time, bones, sinews, muscle, limbs, lungs, palate, eyes, etc. Aristotle delights in describing the details and intelligible order of the process.

All of this, to use Thomas' favored term, is simply the nutritive soul, working through the heart to *dispose* the body to the sensitive soul by converting nutriment into the appropriate organs. That its motion is towards the body of a mature human being and not towards the mature body of a snail or a tomato plant, is due to the precise kind of motion of the formative power which engenders in the embryonic heart, the first principle of movement and growth of a *human* body. Thomas, to account for Jesus' acquisition of Mary's human nature, grants the same status to the mother's menstrual blood. Even though it is only the material cause of the embryo, it is a *human* material cause, and engenders a *human* nature, and anticipates a properly *human* soul. In this account, the embryo is the agency of its own development. It actualizes its potential by converting the

nutriment which comprises its body from potentially parts of a body into actually parts of a body. It continues to do so, and its actions suit its needs in different stages of development. It is guided by its human nature, which is from the father's formative power as well as the mother's material power, to act according to its own specific good. The good of a human nature is to be rational; so it constantly disposes itself in such a way as to become so, as much as it is able. We may understand these successive forms as intermediate generations of imperfect forms, but the finality of the embryo as oriented to the final and perfect form is not thereby an extrinsic finality. The embryo, as a product of nature, has an internal finality and orientation to an end that it cannot, by itself, reach. It will, however, bring about the good proper to itself inasmuch as it lies within its power to do so.

The critique that Jones offers of the traditional interpretation of Thomas' embryology is surprisingly apt to the above account:

...it can no longer be denied that the process of embryonic development is truly a vital activity of the embryo...Development is as much an activity of the embryo as is growth, nutrition or respiration. However, if the organs of the embryo are shaped by an *intrinsic power* of development and not from outside by the continuing action of the father's seed then, according to Thomistic principles, the embryo must already possess a human nature, because the active powers that something possesses are determined by its nature.<sup>4</sup>

This is precisely what we have found within a framework that, if not purely Thomas' own, is at least Thomist in the sense that it defers to Aristotle's account of embryogenesis for resolution of internal tensions. The embryo possesses a human nature, which it works out in its own development, actualizing its potential and driven by its desire for the rational soul. As Thomas is so fond of reminding his readers, what is generated is first imperfect.

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<sup>4</sup> *Soul of the Embryo*, 172-73.

Though this view of the embryo does not thereby perfectly resolve Thomas' difficulties in identifying the embryo as human and as continuous with the mature person, it does identify avenues by which Thomas *could* have done so. It is beyond the scope of this work to harmonize all discrepancies within his account, if it is even possible to do so. Therefore, we will attend instead to problems that arise as a direct result of taking this stance on the embryo. There are a number of possible problems. Chief among them are 1.) how to reconcile God's action in creating the rational soul with the action of the parents in the generation of offspring; 2.) that embryos before the rational soul do not have a subsistent, spiritual soul; and 3.) whether the human embryo is also a *person*.

### **The Rational Soul**

To introduce the concept of man as a unity of body and soul, Thomas explains to his readers what he means by *soul*. It is "the first principle of life in those things which live...life is shown principally by two actions, knowledge and movement," and a bit later, "the soul, which is the first principle of life, is not a body, but the act of a body."<sup>5</sup> The soul proper to human beings is a unique kind of animating principle, however. While "as the form of the body, it belongs to the animal genus, as a formal principle"<sup>6</sup> it is quite different from the merely sensitive soul proper to an animal. The biggest difference is that nutritive and sensitive souls, including those appropriate to the embryo at early stages, come to be within the matter from the action of the semen as agent or from the dispositive action of the embryo's nutritive soul. This is not sufficient to account for the existence of the rational soul. Unlike nutritive or sensitive souls, the rational soul is both

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<sup>5</sup> *Summa Theologica* Ia.75.1.

<sup>6</sup> *Ibid.*, Ia.90.4.

incorporeal and subsistent.<sup>7</sup> It cannot be brought into act from the potency of matter; moreover, the agency of a merely natural power is insufficient to cause its existence.<sup>8</sup> It suits the body to be made by another body; Thomas reasons that God only created Adam's body because there was no body of the same species already existing that might bring Adam's body into existence through generation.<sup>9</sup> The rational soul, however, is a special case. Its existence, once it does exist, is proper to it. It has an operation that belongs to it in itself, and not by virtue of its union with the body. Therefore it is incorruptible and endures in a way that the body does not naturally do.<sup>10</sup>

### **God and Parents Cooperating in Generation**

Some delayed hominization interpretations of Thomas involve a misunderstanding of his view of God's role with regard to human generation. Robert Pasnau, for instance, begins his explication of Thomas' embryogenesis by dividing the "natural" part of an embryo's development from the "supernatural," as if God has no hand in the embryo until that point:

Unlike other material beings, which are generated from matter through ordinary natural means, humans are only partly a product of nature. Although our nutritive and sensory capacities are the straightforward results of sexual reproduction, no different from which take place in other animals, our mind is infused by God.<sup>11</sup>

In this view, the embryo is first a plant-like and then an animal-like being which must be transformed by the power of God into a human being. As we have seen, however, this interpretation entails a complete reworking of the meaning of generation such that

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<sup>7</sup> *Ibid.*, Ia.75.2.

<sup>8</sup> *Ibid.*, Ia.118.2.

<sup>9</sup> *Ibid.*, Ia.91.2.

<sup>10</sup> *Ibid.*, Ia.75.6.

<sup>11</sup> *Human Nature*, 100.

humans alone are the exception to the rule that like engenders like. Moreover, that Thomas does not himself hold this view is made abundantly clear when he traces Christ's acquisition of a human nature to Mary's role in His conception.

Jones is troubled by this implication of the common view of delayed animation. In his opinion, it "seems to reduce the human parents to the father and mothers of animals which God subsequently transforms into children, or even the father and mothers of vegetables which later become animals and which God finally transforms into children."<sup>12</sup> By this account, the embryo

could be seen neither as human nor as spiritual, but as a sort of biological preamble to the work of God. This isolation of the biological from the human and the spiritual is at odds with the insistence seen elsewhere throughout Thomas's work that the spiritual soul is at one and the same time the form of a living body.<sup>13</sup>

I agree with Jones that this is indeed a troubling view of the embryo, and also that its implications are foreign to Thomas' view of the unity of body and soul in man. It is also not an accurate interpretation of Thomas' embryology. Contrary to Pasnau, Thomas held that man is made, not created, because he is a composite substance, and "[t]o be made is proper to composites."<sup>14</sup>

Thomas himself is aware that his position on the embryo is potentially vulnerable to the criticism that this would be to hold the human body as existing before the (properly) human soul:

For even if we grant that man's body is fashioned before the soul is created, or vice versa, it does not follow that the self-same man precedes himself: since a *man is not his body nor his soul*. But it follows that some part of him precedes the other. In this there is nothing unreasonable: because matter precedes form in point of time; matter, that is to say, considered as being in potentiality to form, but not

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<sup>12</sup> *Soul of the Embryo*, 106.

<sup>13</sup> *Ibid.*, 122.

<sup>14</sup> *Summa Theologica* Ia.118.1.

as actually perfected by a form, for as such it is simultaneous with the form. Accordingly the human body, considered as in potentiality to the soul, and as not yet having a soul, precedes the soul in point of time: but then it is human, not actually, but only potentially. On the other hand when it is human actually, as being perfected by the human soul, it neither precedes nor follows the soul, but is simultaneous with it.<sup>15</sup>

The embryonic body is human, that is, in terms of its potential to the rational soul, not in the sense that, when it has the rational soul, it will at that point become human.

It is not necessary to view either the body or the soul as the “real” human being. Thomas certainly does not. Nor does he think of generation as a process whereby man generates an animal which God transforms into a human being with the creation and infusion of the rational soul. Instead, over and over again, he speaks of God’s actions as a completion of the work of generation by the parents, and views the child that ensues as a result of cooperation of God and man. He does not seem to anticipate that the importance or integrity of God’s work is threatened by the human nature already existing within the embryo. It is the appropriate inheritance of an animal of a rational nature, and God’s actions are the appropriate and necessary complement to that nature, inasmuch as it goes beyond matter.

Regarding the charge that God co-operates with adulterers by creating souls for embryos conceived in an act of adultery, Thomas reminds readers that generation of the embryo is natural and not sinful. It is in this sense that God “co-operates in their action by giving it its ultimate perfection.”<sup>16</sup> His actions are the perfection of the embryo’s generation. Elsewhere, God is described as the one who “completes the generation of

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<sup>15</sup> *Summa Contra Gentiles* 2.89. Emphasis added.

<sup>16</sup> *Ibid.*

children.”<sup>17</sup> In another passage addressing the same concern about generation which results from adulterous acts, Thomas regards anyone who makes this argument as deceived “in failing to distinguish the action of nature which is the procreation of the child, to which action God gives the complement, from the deliberate act of adultery wherein the sin consists.”<sup>18</sup> The action of God and man *complement* each other: together, they complete a whole generation.

Thomas also reminds those who view man’s part of generation as radically distinct from God’s part that

both body and soul are made by the power of God: although the fashioning of the body is from Him by means of the natural virtue in the semen, whereas He produces the soul immediately. Neither does it follow that the action of the seminal virtue is imperfect; since it fulfils the purpose for which it is intended.<sup>19</sup>

If the formative power of the semen is the father’s instrument, it is also in a sense God’s instrument.<sup>20</sup> It is this latter concept on which J.T. Culliton expounds, insisting that God and the parents do not “merely co-operate in their respective acts, each producing, as it were, a part of the whole child. God and the parents collaborate in one action, in one creative process.”<sup>21</sup>

### **Sparrows: Embryos Before Rational Ensoulment**

The nutritive soul is not a subsistent form, likewise the sensitive. Either may exist as the form of a composite substance, but does not exist of itself.<sup>22</sup> This raises the question of the fate of embryos who die before being rationally ensouled. It is man’s

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<sup>17</sup> Though this phrase occurs in a long list of arguments which Thomas refutes, he does not dispute that God does, in fact, “complete generation” this way. *Ibid.*, 2.88.

<sup>18</sup> *On the Power of God* 3.9.

<sup>19</sup> *Summa Contra Gentiles* 2.89.

<sup>20</sup> *Ibid.*

<sup>21</sup> “Rahner on the Origin of the Soul: Some Implications Regarding Abortion” *Thought* 53 (1978), 206.

<sup>22</sup> *Summa Theologica* Ia.118.1.

rational soul which is incorruptible and therefore survives the death of the body. What of the human lives which end before that can occur?

Ford considers the problem, and comes to the conclusion that it “would indeed be presumptuous[sic] to hold that God could not save those who died before the age of reason. We cannot limit God’s power, goodness and wisdom as though He were unable to provide eternal happiness for these human individuals who die before being born.”<sup>23</sup>

Dombrowski and Deltete, on the other hand, do not believe embryos without a rational soul warrant serious consideration. They conclude their work with a reminder of Jesus’ words in Matthew: “you are worth many sparrows.”<sup>24</sup> “Presumably,” they write, “the ‘you’ here refers to those with the capacity for rationality who heard what Jesus said, since it is hard to believe that Jesus was referring to (early) fetuses.”<sup>25</sup> I do not find it so ridiculous that the God of the universe could speak in that way to the blastocysts and the embryos in the crowd whether or not those who were just beginning to be could hear or understand or respond. It would not be unlike God in the least to do so; even we who have functioning ears and eyes have always needed Him to open them to His words.

Augustine, considering questions about the resurrection, tries to make sense of the embryos which have not yet received the rational soul. He writes:

The first question that arises in this regard concerns aborted fetuses, which have already been born in the wombs of their mothers, but not yet in such a way that they can be reborn. If we say that they will rise again, this may be a tolerable opinion concerning those that are already formed. But as regards unformed fetuses, who would not rather think that they perish entirely like seeds that have not been conceived? But who would dare to deny, even though he may not dare to affirm it, that resurrection will supply anything the fetus lacks in form? Thus that

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<sup>23</sup> *When Did I Begin?*, 181.

<sup>24</sup> Dombrowski and Deltete reference Matthew 10:28 as the source; since that verse is an admonishment to fear “the one who can destroy both soul and body in hell” I will assume they intended to cite Matthew 10:31.

<sup>25</sup> *Defense of Abortion*, 129.



perfection which was destined to come with time will not be lacking, just as the defects that time would have brought will be absent, so that nature will not be deprived of anything fitting and suitable that time would have brought or be defiled with things hostile and contrary to it that time has already brought, but what was not yet complete will be completed, and what had been spoiled will be restored.<sup>26</sup>

We may also remember that the good of the embryo, even before rational ensoulment, is the same good of the embryo after rational ensoulment. The Westminster Shorter Catechism puts it this way: “Man's chief end is to glorify God, and to enjoy him for ever.” It is human nature to desire that good, and the embryo at any stage is profoundly human. We have therefore good reason to hope that what Augustine wonders about is true: that God will supply anything the embryo lacks in form, so that it, too, may reach its final end. For “a natural desire cannot be in vain.”<sup>27</sup>

### **Personhood: The Embryo and the Separated Soul**

If the debate about the embryo in Thomist contexts is most often about animation, a great deal of the larger debate about the ethics of abortion hinges on personhood, on the question of whether what is unquestionably biologically human life is also a person in the sense of a being with inherent dignity and possessing certain rights. Thomas adheres to the standard definition from Boethius regarding the definition of *person*: an individual substance of a rational nature.<sup>28</sup> In an immediate animation view, it is possible to speak of the embryo as a person, because as informed by the rational soul, even the zygote meets that standard, at least on technical merit. However, that is not Thomas' view of the embryo.

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<sup>26</sup> Augustine, Enchiridion 85, from *On Christian Belief*, (Hyde Park, NY: New City Press, 1999), 323-24.

<sup>27</sup> *Summa Theologica* Ia.75.6.

<sup>28</sup> *Ibid.*, Ia.29.1.

One could make the argument that the embryo, as animated by a nutritive or sensitive soul, does possess a rational nature in the sense that it possesses a human nature. That it is an individual seems clear, whatever one thinks of the possibility of a single subject traversing a succession of souls, there is certainly never more than one subject at a time. That it is in act by a soul makes it a substance, if perhaps an incomplete one. So far this seems to be a very weak argument, however. It would be in vain regardless, as Thomas clarifies the criteria further: “Not every particular substance is a hypostasis or a person, but that which has the complete nature of its species.”<sup>29</sup> The embryo most decidedly does not have the complete nature of its species. To Thomas, before it has the rational soul “the embryo is not a perfect being but is on the way to perfection: and therefore it is not in a genus or species save by reduction, just as the incomplete is reduced to the genus or species of the complete.”<sup>30</sup> Therefore, it cannot be a person.

We might be surprised to discover that, if the embryo is not a person, neither is the separated soul, and for the same reason. Thomas is quite serious about his view of the human person as a unity of body and soul. The soul, once separated by death from a mortal body, is also not a complete species. Without the body, the soul “has not the perfection of its nature, because by itself it is not the complete species of a nature, but a part of human nature: otherwise soul and body would not together form one thing save accidentally.”<sup>31</sup> Even though the separated soul may have the great privilege of beholding God as He is in the Beatific Vision, it will not even then be a complete species. Even then it will not be a *person*. Only when the embryo is animated by the rational soul, only when the separated soul is reunited with the body, are they truly persons.

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<sup>29</sup> *Summa Theologica* Ia.75.4.

<sup>30</sup> *On the Power of God* 3.9.

<sup>31</sup> *Ibid.*, 3.10.

Though the rational soul is beyond natural generation, organic bodies suitably disposed to the rational soul are not. In fact, this is just what the generative power of the human soul ought to be able to do: to generate by its nature in another of the same nature a nutritive life, which by gift of that nature causes the actualization of a sensitive soul and then a disposition to receive the rational soul, fueled from within by the desire of the good of its own kind: the knowledge of God. That God creates and bestows the rational soul is also appropriate, given the special place of man in Creation, as aimed at the immeasurable joy of seeing God face to face. We are his children, too. If it is difficult for Thomas to explain this, we must not be surprised. It *is* difficult to explain. With us, God has done the seemingly impossible and bridged plant and angel. The only greater gap bridged is the miracle of the Incarnation, which makes one being of God and man.

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