FISSION AND CONFUSION

I. Introduction

Many Catholic opponents of abortion and stem cell research do so on the grounds that the embryo is ensouled from fertilization onwards. We are each identical with a being that was once a zygote and the soul which we share with that early embryo bestows upon us the value that makes the destruction of the embryo wrong. While there may be reasons to doubt the truth of the hylomorphic soul theory, we don't believe that these are to be found in arguments pertaining to the fissioning (twinning) or fusion of early embryos.[1] We will respond to those arguments in the form they have recently been given by David Shoemaker (2005, pp. 51-75). We maintain that his objections can be met in some places by a more loyal reading of Aquinas' hylomorphism and in other places by a more charitable reading that also draws upon some contemporary work in analytical metaphysics.

The solution offered to the problems posed by twinning will involve the co-location of two human beings prior to twinning despite the appearance of there being just one. But this doesn't mean, as Shoemaker thinks, that there will be two souls in one body. Each soul will configure the same matter and the result will be two bodies, that is, two embryos – each of which is a distinct human being. We will then show that we are not engaged in any special pleading on behalf of human beings because there are other cases of spatially coincident entities of the same kind. We will also demonstrate that there is no additional problem of individuating and identifying pre and post-fissioned artifacts or embryos thus immunizing us against the charge that we have avoided embryos fissioning out of existence by arbitrary fiat.

[1] While both of this article's authors are pro-life Roman Catholics, only one favors a hylomorphic account of personal identity.

We will also argue, pace Shoemaker, that the fusion of early embryos doesn't involve the hylomorphic account in any contradiction with its own position on the resurrection of the body.

It is not just by advocating the co-location of human beings that our account differs from most others who defend ensoulment at fertilization. We will argue that the mistake other defenders of early ensoulment make is to insist that we are essentially organisms that persist only as long as life processes continue. Human beings can exist without being alive in the biological sense. We will go on to argue that human beings aren't even contingently organisms from the two-cell stage until the period a few weeks after fertilization. Biological considerations concerning the nature of multi-cell organisms, metaphysical considerations regarding the fission of single-cell creatures, and even theological considerations having to do with Purgatory provide Catholics with three good reasons - and non-Catholics with a pair of good reasons - to maintain that we aren't organisms throughout our entire existence. What we endorse, in the language of David Wiggins's, is construing "organism" as a phase sortal.

II. Why Twinning is Not a Problem for Early Ensoulment

Shoemaker believes that the possibility of twinning poses a genuine threat to the coherence of the theological view of early embryos being ensouled. Since the soul is a simple substance it cannot divide along with the dividing cells of the early embryo. So when twinning occurs there is a puzzle about what happens to the original human being - call it Adam. Shoemaker surveys four possibilities.

> (1) Adam survives as *both* fission products – that is, Adam's soul is embodied in both of the survivors; (2) Adam ceases to exist altogether (here on earth, anyway), and two fission products are two new human beings, each with their own new souls; (3) Adam survives as *one* of the fission products, while the other

> at that point becomes a newly ensouled human being; (4) Adam is actually *two* human beings, with two souls, until fission, at which point one soul serves to unify one clump of cells, and the other soul serves to unify the other clump of cells (2005, p. 63).

We agree with Shoemaker that option (1) is not worth taking seriously. We also believe that Shoemaker is on target in claiming that (2) is unattractive because it means that monozygotic twinning produces the demise of the pre-existing human being. We have always been surprised that more pro-lifers didn't appreciate this when they argue that the mere possibility of twinning is not a problem for placing ensoulment at fertilization. They have seemed content to claim that when twinning didn't occur the same embryo existed from fertilization onwards. One would think that the tragedy of a human being going out of existence on the rare occasion when twinning does happen would move them to pursue an alternative. Shoemaker thinks option (3) should be rejected because it varies the timing of ensoulment and means that twins will differ in age.[2] We are interested in defending the fourth possibility. This is the position that there are two human beings prior to fission present from conception. Shoemaker says that this gives the theological advocate what he most wants but does so at a

[2] It is worth pointing out that we don't believe that a single time of ensoulment has the theological importance that Shoemaker seems to impart to the position when he writes of the need to avoid violating "the theological assumption we are working with that the life of *all* human beings begins at conception." 63-64. All religious advocates of ensoulment should accept that God can create someone, if He so wished, at a stage of development equivalent to that of a three week old embryo or any other stage. And if one takes the Biblical story of Genesis literally, Adam and Eve were human beings who were never zygotes. What the soul theorist can't accept are any embryos existing at fertilization without being ensouled for then the soul isn't needed for the embryonic unity and developmental telos.

cost, for "it implies that two human beings can have one 'body' (prior to fission), but this possibility violates the one body/one soul assumption" (2005, p. 64). The embryo can't have two souls in it. We think this alleged problem is a misunderstanding of hylomorphic doctrines of individuation and of the relationship between bodies, embryos and soul/matter composites.

Shoemaker insists that the Thomist can't accept two human beings in one body. He seems unaware that there can't be two human beings that "exist simultaneously in one body" (2005, p. 65) because there can't even be one human being existing in a body! The body *is* the human being. Shoemaker's error lies in not realizing that when the soul configures matter the result is a body which is identical to the human being which is identical to the embryo. Co-location is being misunderstood as if there were two souls overdetermining the configuration of a *single* body.

That Shoemaker misunderstands the soul theorist's identification of the body, embryo and human being is evident in his rejection of option (4) on the ground that there can't be "one embryo housing two distinct souls, rendering it two distinct human beings, both wholly present at the time" (2005, p. 71). It is a mistake to speak of *one* embryo that is two human beings rather than two spatially coincident embryos that eventually divide.[3] The claim of the religious

[3] In two other places, Shoemaker curiously fails to identify the human being and the embryo. First, he writes of the embryo existing prior to the human being: "the cells together must already constitute a distinct ontological object in order then to be categorized as another distinct object in virtue of their possession of a soul….Thus the relevant, identifiable ontological object the cells constitute is that of a human embryo, and it is such an embryo, according to the theological advocate, that is ensouled, rendering it *then* not just an embryo but also a human being." (2005, p. 60). Shoemaker also writes of the human being as identical with only part of the five day-old embryo, the inner cell mass. He doesn't think the hylomorphic theorist should consider the embryo's outer cells, the trophectoderm to be part of the human being because they go on to form the placenta. We, on the contrary, maintain that they can

pro-lifer after all is that the embryo *is* the human being. Since Shoemaker says he is considering the position that there were two human beings there all along, he must identify each distinct human being with a distinct embryo. This is what motivates the discussion in the first place for the soul theorist advocating co-location. Shoemaker has misunderstood the co-location twinning solution of the religious pro-lifer, then rejected this misconstrual as violating the pro-lifer's assumption that a soul can configure at most one body.

The better interpretation of co-location of two souls is that the number of souls determines the number of bodies.[4] So two souls don't mean two human beings with one body thus violating the one body/one soul assumption. Rather, two souls entail two bodies. These two bodies are each identical to a different human being. The two spatially coincident human beings separate upon twinning. In the cases of conjoined twins they only partially separate. [5]

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be treated like cells in the spider that produce its web. The web is not part of the spider but the cells producing it are, as is the material out of which the web is made until it is expelled from the arachnid's body. Likewise, the trophectoderm is part of the embryonic human being, the later placenta that emerges from it is not.

[4] Some support of this can be found in Joseph Owens' reading of Aquinas. He writes: "The form has in consequence full right to be regarded as cause of individuation in material beings. In immaterial substances, of course, it has no competitor in the order of essence. But even when it has a co-principle in constituting the essence of a thing, as it has in any material substance, the determining role of the form seems to reach down to the individuation" (1994, p. 180).

[5] Some readers might protest that twinning can be forced and so unlike in cases of natural twinning, there won't be two souls from fertilization. We would first point out that there isn't evidence that human twinning can be forced. For a review of the evidence regarding forced human fusion and fission, see Rose Koch-Hershenov's work (2006, pp. 139-141). But even if twinning can be forced by human intervention that doesn't undermine our co-location argument. We would claim that God foresaw the action and placed two souls there from the beginning. This will not create any more problems for our freedom then any other instance of God's foreknowledge. Whatever solution

The view that Shoemaker must refute is that there are two souls configuring matter resulting in two bodies and two human beings. Instead, he puts forth and rejects the view that two human souls mean two human beings in one body because "this answer is not a possibility for a Thomistic conception of the souls, given that on the view souls are formal designs, particularized in specific human bodies, so there can only be at most one soul per body" (2005, pp. 71-2.)[6] Drawing upon the familiar analogy of shape (design) and form he points out imprinting two coin designs on one piece of metal still wields only one actual coin." He understands the soul to be like the design. Since stamping the metal twice doesn't make two coins, two souls don't make two bodies. However, this shape/design analogy may not be the best example to capture the hylomorphic soul of a human being because of the dynamic nature of the latter.[7] Since the alleged co-located twins can diverge there is reason to say that there were two all along. This isn't as easily said about the coin example since two imprinted designs

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is available for reconciling God's omniscience and our freedom can be borrowed. For instance, Lynne Baker conjectures that Christians should be compatibilists (2003, pp. 460-78).

[6] Shoemaker is perhaps using "body" as if it means "matter." Two souls wouldn't make two masses of matter. The problem may be that Aquinas often gets translated as claiming that "a human being is a composite of soul and body." As Eleonore Stump explains: "Given his view that the soul is the substantial form of a living human body, we would expect him to say instead that a human being is a composite of matter and soul, not body and soul. Nonetheless, body and soul is a common Thomistic description of the material composite that a human being is. It may be that the problem here is an artifact of translation, in some contexts, the Latin word translated "body" ('corpus') refers just to matter" (1995, p. 512).

[7] Moreover, Aquinas's own belief is that the soul is unlike all other living and nonliving forms in that it can survive (in Purgatory) independently of the matter configured. Shoemaker misses that point in his comment that the "soul has *no real* existence unless it is instantiated in a particular body." (2005, p. 65).

don’t appear to create two spatially coincident coins. Nevertheless, there are artifacts that can still make our point about co-location and fission with the post-division entities being unproblematically reidentified with the pre-fission entities. So the reader will see that there are cases rather like Shoemaker’s stamping of the coin twice which do indeed produce two artifacts. We don’t think it violates any fundamental principles of hylomorphism to recognize this possibility.

Let’s look at two examples of spatially coincident entities of the same kind that can be individuated and which can be reidentified after fissioning. These are modifications of examples of Kit Fine and David Hershenov. First, Hershenov’s example (2002, pp.1-22). Consider two roads that overlap for a stretch and then diverge at a 45 degree angle at each end. Call one Route 9 and the other Route 1. Virtually everyone believes roads can ordinarily become smaller when damaged and larger through construction. Next imagine that an earthquake destroys the parts of the two roads that did not overlap. So as a result of the earthquake both roads would have become smaller and spatially coincident. Though they are made of the same strip of asphalt, they are two distinct roads as a result of their modal and historical properties. They have not fused out of existence because they haven’t fused at all since no earlier independent part of one became entwined with a part of the other. Now imagine that the destroyed parts of the roads are rebuilt exactly where they were before and then later the overlapping parts are destroyed in a second earthquake. This would result in the complete separation of routes 1 and 9. There wouldn’t be any worry which of the now separated roads was Route1 and which was Route 9. The moral of the story is that two spatially coincident objects are possible as is their non-arbitrary re-identification after separation. Likewise, if there are two embryos co-existing, they could separate when the two souls separate, each configuring

half the cells that were configured before, or if fission occurred at the zygotic stage, each configuring a smaller cell.

Perhaps the reader doesn't like the way in which the roads divide by first re-acquiring some non-overlapping parts. So we will modify Kit Fine's example (2000, pp. 357-62). Imagine a letter written on a thick piece of paper in English by Ellen who is also fluent in a language called 'Engverse.' It is mailed to Evan who is likewise fluent in English and Engverse. One of the interesting things about the two languages is that when one looks at the back of a letter with English on it appears from that side to be written in the Engverse just as the capital letter "E" in English looks from the reverse side to be the Existential Quantifier. When Evan receives Ellen's letter he writes a return letter on the other side of the page in Engverse which, by chance, perfectly matches up with the letters that Ellen wrote in English. It is as if he just traced her letters. The letter he mails to Ellen is spatially coincident with her letter. There are two distinct intentions behind the two letter writings, two distinct intended readers, two different contents and yet the resulting letters coincide. If readers are still resistant to the claim that there are two spatially coincident letters, they should imagine that the paper, which is $1/100^{th}$ of an inch thick, is divided into two pieces of paper each $1/200^{th}$ of an inch thick. I think most would describe it as separation in which each letter became thinner. It would be a mistake to claim each letter already is just half the size and thus was not co-located. One wouldn't claim that an ordinary letter only was composed of half the paper it was written on. Since the letters can survive separation that confirms that there were before two spatially coincident letters. And there wouldn't be any reason to claim that a single letter fissioned out of existence on the grounds that it was arbitrary which post-fission letter was the letter from Ellen to Evan and which was the letter from Evan to Ellen. Whichever letter consists of the side that

was written on by Evan is Evan's letter – though thinner. Likewise, each of the fissioned cells possesses one of the souls from the pre-division spatially coincident embryos and is identical to that human being. So again, the moral is that there can be spatially coincident objects of the same kind that can be non-arbitrarily fissioned in an identity preserving manner.

Let me try to forestall one last objection to the claim that the artifacts are spatially coincident in the analogous manner to a pair of souls and that has to do with the timing of their origins being different. To borrow again from Kit Fine, imagine that the paper was placed in a hole in the wall between two apartments and that the two authors wrote separate letters at the same time on each side. Or imagine a case with just a single creator, a very clever and ambidextrous person who could compose a pair of letters at the same time in English and Engverse. He writes on one side of the paper with his right hand and simultaneously writes on the other side with his left hand and then mails the letter to cohabitating friends.[8] One of the recipients reads only English, the other just Engverse. These letters came into existence at the same time. And since they could be divided as before, there shouldn't be a worry about there being no fact of the matter regarding which of the fissioned letters is which of the pre-fissioned spatially coincident letters.

Let's now return to Shoemaker's own example of imprinting two coin designs on one piece of metal. It may be hard to see how there can be two coins when there's only one mass of metallic matter, but it is not impossible now that the reader has been primed and if

[8] Perhaps some readers are worried that the two separate writings lead to a pair of overlapping letters rather than spatially coincident letters. Such readers might maintain that neither letter possessed the writing in the other language as a part of itself. That concern can be overcome by imagining that our above multitasking person writes just once in a thick, wet magic marker, knowing that it will stain the other side of the paper in Engverse.

Shoemaker's story is modified a bit. Imagine that there are two neighboring countries (Frontenstein and Backenstein) that share a mint. They each mint coins with the official insignia on only one side. Being poor, they make their coins out of scrap metal and don't care what is on the other side. So some of their coin pieces have clean backs devoid of writing or images while others don't. Frontenstein and Backenstein use the same machines to make their coins. The machines can be operated by different control panels at some distance. Now imagine that a scheduling mistake occurs and that two of the machines are being operated from two different panels by Mint employees, one from each country. They both press the imprint design buttons at the same time and so the coins have imprinted on one side the official design of Frankenstein and on the other side the official design of Backenstein. Since both countries' treasury departments don't care about what is on the other side of their official coins they are likely to each accept the coins as genuine currency. Thus where appears to be just one coin, there will actually be two co-located due to the double imprinting.

Some readers will claim that there is only one coin that can be used as currency in both countries.[9] That is, there is one artifact with a dual function. Such a skeptic of spatially coincident coins will likely claim that the design on one side is either necessary or sufficient for the continued existence of the single coin because the round piece of metal without the imprint won't count as a coin. But this will actually come as quite a surprise to the citizens of both countries. If the coin loses its Frontenstein-side design and that is necessary for the coin's persistence, it will be quite a shock for the Backenstein citizens to be told that their coin no longer exists. It looks just like many of their other working coins and comes from the appropriate mint and has their state's design imprinted on one side. And if the design on either

[9] Achille Varzi took this approach in conversation.

side is just sufficient for the coin's persistence, it will come as quite a surprise in the above case to the Frontenstein citizens to be told that a round piece of metal without their state inscription is still an existing coin of their realm since the one side with a remaining design has the Backenstein imprint on it. Thus we conclude that existing practices towards artifacts don't support the claim that there is only one coin shared by two countries. It is only by an ad hoc alteration of artifact persistence conditions can the existence of the two spatially coincident coins be denied.[10]

III. Why Fusion is Alleged to be a Problem

Shoemaker considers the possibility that the violation of the one body/one soul assumption would be merely temporary in the fission case and therefore acceptable to some theological advocates of the soul. Of course, we have seen that there is no need to make an allowance for even a temporary violation of the assumption. But Shoemaker thinks the less

[10] If readers are bothered by the above examples of co-location being of just artifacts, they should consider the case of the branchless tree that is spatially coincident with the trunk or the philosopher's well used example of the human animal that is pared down to the size of the brain. Although these are not cases of co-located objects of the same kind, they are instances of co-located objects that are physically indistinguishable. Christian philosophers who believe in demonic possession may have another example of co-located persons, though the two persons are not both human. And a possible interpretation of dissociative order could be of co-located human animals. Furthermore, there is an extreme case of conjoined twins, the dicephalus, that may best be construed as spatially coincident human animals rather than merely overlapping human animals. Such conjoined twins are just like a single normal human animal from below the neck. But since each of their heads is caught up in the same biological life processes of the other, it is difficult to maintain that they are merely overlapping animals who share all their parts except for the other's head. If persons must match up one to one with human animals, then if two heads mean two persons then that would mean two human animals despite the appearance of just one.

discussed phenomenon of fusion presents a problem to the theological advocate who is willing to accept co-location and ensoulment at fertilization. He writes that if the "already divided-embryos could be *pushed* back together to form a single embryo once more that will, if implanted, develop normally into a single infant" (2005, p.p. 64-5). We have stressed the word *"pushed"* to point out that this doesn't happen naturally. In fact, we don't believe if it has ever happened naturally or by human intervention with *human* embryos.[11] Those who claim it could are extrapolating from what has happened with animal embryos. But a Christian shouldn't be surprised if there is a difference between human and animal embryos since we are made in God's image and they are not.

Even if "forced" fusion is possible, it may not be that hard to accept. There wouldn't be the problem of evil that God implants souls and then allows them to go nearly immediately out of existence. If fusion happens naturally (unforced), one might wonder why the lame miracle? Why create and ensoul human beings through miraculous intervention that would soon go out of existence often without anyone knowing about them? Shoemaker claims that there is no point for God to create embryos just for the afterlife. We don't share his puzzlement. Heavenly life is supposed to be much better than earthly life. We wouldn't be surprised if families in the next life are (re)united with deceased kin, known and unknown.[12] So one of the delights

[11] See Rose Koch-Hershenov's work on totipotency, twinning and ensoulment for a review and analysis of the existing evidence regarding forced human fusion and fission (2006a, pp. 139-164).

[12] We are not claiming that death would be good for the person who died. That might be an interpretation that fits the Cartesian human being that consisted only of a soul that merely used a body, but the hylomorphic soul would be in a deprived state without the body. For an account of how hylomorphism constrains the abortion debate see Koch and Hershenov (2005, pp. 751-64). The hylomorphic soul's nature is to be embodied. Death and

awaiting the "reproductively challenged" could be children in Heaven. Of course, we aren't claiming that this is God's reason, we just think it is a 'leap of unimagination' on Shoemaker's part to claim that there's "no point" to such ensoulments and that we are left with an "arbitrary God" (2005, p. 68, nt. 37). Anyway, this version of the problem of evil isn't really new given the multitudes of unknown miscarriages of ensouled fetuses throughout history. If theologians can plausibly interpret the latter evil as compatible with God's goodness, any theological-ethical qualms about tragic fusion will likely be amenable to a similar treatment. That said, we'll limit our discussion to the ontological rather than moral objections to early ensoulment.

Let's assume that forced fusion is possible and a (normal) single human being will result. We believe that Shoemaker is wrong to maintain that in the case of fusion the "Thomistic conception is *incoherent* with respect to early embryos" (2005, p. 72). He reaches this negative conclusion because he finds key assumptions of the hylomorphic soul theorist to be incompatible with the following three interpretations of fusion: (a) both souls would remain housed in the fused embryo; (b) both would be replaced in the fused embryo by a new soul; (c) only one of the souls would live on in the fused embryo. Shoemaker comments that (a) is absurd.[13] He thinks (b) is problematic for two reasons: first, it would allow two deaths and secondly, the embryo would be a new human being thus violating the general theological

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disembodiment are a result of sin and are not the proper state of the soul. Moreover, if one ceases to exist at death and doesn't exist again until resurrection, then death may indeed be a harm -unless Epicurus is correct.

[13] Even if the fusion of embryonic humans could occur, Shoemaker needs that to occur without the result being conjoined twins or dissociative disorder (multiple personalities). These cases might be interpreted as two human beings. Only after these possibilities are eliminated will some religious advocates of the hylomorphism feel pressured to deny that the two embryonic pre-fusion souls survived.

assumption that ensoulment occurs at fertilization. Shoemaker suggests that "the safest bet would be (c) where one soul would be removed and the other would remain and be attached to the new fused product" (2005, p. 65).

Shoemaker insists that last approach (c) would still contradict fundamental tenets of hylomorphism. He explains that according to the "Thomistic view: the soul is by nature *embodied;* it is a formal design that has no real existence unless it is instantiated in a particular body, much like a coin, whose essence consists in both its formal design (shared by all such coins) and its particular physical construction" (2005, p. 65).[14] Shoemaker stresses the intimate relationship between the hylomorphic soul and the body since "Aquinas argued that it was only this conception of the soul that can make sense of the Christian doctrine of the resurrection of the body in the afterlife, for without a body there could be no particularized person" (2005, p. 65). Shoemaker asserts that the doctrine of resurrection leads to a contradiction with (b) and (c) in which the fused embryo is either given a new soul or one of the two embryos that fused provides the soul of the post-fusion embryo. The alleged problem is that if one or both of the pre-fusion embryos are extinguished "in neither case has any human tissue died (or disappeared) at all. If Human beings have died where are their bodies? This certainly does not bode well for the resurrection of the body, if there are no existing bodies to be resurrected" (2005, p. 66). Shoemaker suggests that the soul theorist should instead abandon the view that "each body prior to fusion was ensouled" (2005, p. 66). Of course, the acceptance of late ensoulment will do away with the main objection to harvesting stem cells and destroying embryos in the process.

[14] Shoemaker is mistaken as a matter of Aquinas scholarship to say the human form has "no real existence" unless embodied for Aquinas believes that the human soul can exist disembodied in Purgatory.

IV. Why Resurrection is not a Problem in Cases of Fusion

We don't think that fusion poses any problems for resurrection. There is no need to worry about any of the following: an organism going out of existence without undergoing a dying processes, the absence of tissue necrosis, or there being no dead, intact bodies to resurrect. It might help if we first consider the fissioning of an amoeba. Amoebas are one-cell organisms. When an amoeba divides it does not become a scattered multi-cell organism. Instead it goes out of existence and is dead. Although there is no dead body, no dying and decaying tissue, it is surely hard to doubt that the amoeba went out existence. And any composite thing that was alive and goes out of existence is then dead. It is absurd to say that something that doesn't exist anymore that it is still alive or even that it is indeterminate whether it still lives or not. So something can be dead without there being a dead body. Likewise for the fusion of two zygotes. There is no mystery or problem that there aren't dead tissue cells or a corpse. Secondly, as the reader shall learn from us in a later section, the early embryo from the two-cell stage to sometime after gastrulation exists without even being alive, though its cellular components are alive. The embryo as a whole thus doesn't meet the requirements of a composite living creature, a fortiori, one shouldn't expect embryonic deaths then with fusion or fission. Third, there is no need for Shoemaker to insist upon "existing bodies to be resurrected." People sometimes die by having their bodies blown up or ground up into small pieces. Those who don't die in such horrific ways may be cremated or just gradually have their remains turn to dust. So no resurrection theory should demand existing bodies as Shoemaker does. In fact, it isn't even clear that the Thomist needs the resurrected body to come from the same matter it had at the last moment of death (Bynum, 1995, p. 262). But even if we assume that the resurrected body has to come from all or most of the matter that it last configured - the flip side

of the Kripke-like necessity of origins – Shoemaker still wouldn't have identified a problem for the soul theorist. The two embryos that fused into a new embryo can both be resurrected as they last existed. And it should not be thought that they have to remain embryos in the afterlife any more than a resurrected 4 year-old must remain mentally and physically as if he was 4, or a resurrected 86 year old must spend all of eternity with the decrepit body of the typical 86 year old.[15] Even if the resulting embryo dies immediately after the fusion that brought it into existence, there doesn't seem to be any metaphysical problem with resurrecting all three embryos. They can't be resurrected at the exact same time but that doesn't mean that the matter each possessed at the last moment of its life cannot some time later become available as one of the already resurrected beings replaces the matter it possessed at resurrection through normal (or divinely sped up) metabolic processes. So the option that Shoemaker has suggested is the most appealing turns out not to "contradict the proposition…that there is resurrection of all persons (i.e. all person's *bodies*) in the afterlife" (2005, p. 66).

V. The Biological, Metaphysical and Religious Case for Existing without being Alive

Pro-lifers frequently point out that the possibility of twinning doesn't mean in the absence of twinning that there wasn't a human being from fertilization onwards. Typical is Patrick Lee's discussion of the flatworm being cut into two that it "does not imply that prior to the division the flatworm is merely an aggregate of cells or tissues…Likewise, at the early stages of development of the human embryo the cells seem to be as yet relatively unspecialized

[15] Jeff McMahan, echoing H.L. Mencken, seems to make this mistake about Heaven overflowing with miscarried embryos (2002, pp. 10-11). For an account of how such resurrection problems could be avoided see Hershenov's article on materialist resurrection (2003, pp. 24-36). Shoemaker's problem is really no different from the historically much discussed dilemma that cannibalism poses for resurrection.

and therefore can become whole organisms if they are divided and have an appropriate environment after the division… does not in the least indicate that prior to such an extrinsic division the embryo is an aggregate rather than a single, multicellular organism"(1996, p. 93).[16] But this doesn't address a different and more important problem which is the absence of good biological reasons to posit a single multi-cell *organism* the first few weeks post fertilization.[17] Most pro-lifers are too quickly persuaded by the embryonic unity and developmental telos to claim that it is then a human organism. They can't imagine that the embryo could be anything other than a living organism. So their response is to stretch the meaning of "organism" beyond biological respectability.[18] Our contention is that they can defend ensoulment at fertilization without reinterpreting what it means to be a living organism. There surely can be sufficient unity between things that would compel us to judge that they compose a larger object without that unity being such that the entity would have to be considered biologically alive. In fact, there are good metaphysical, biological, and theological reasons for not maintaining this. We will address these in reverse order.

The insistence that we are essentially organisms is a bit surprising coming from Catholics who believe they will be in Purgatory sometime between their death and resurrection.[19] If it is them in Purgatory, then they wouldn't be there as living beings

[16] This passage is reprinted in Frances Beckwith (2004, p. 46).

[17] See Barry Smith and Berit Brogaard's discussion of why the early embryo is not an organism (2003, pp. 45-78). See also Olson (1997, pp. 89-93); Hershenov (2002, pp. 502-511); Peter van Inwagen (1990, pp. 142-168).

[18] Rose Koch describes problems that conjoined twins pose for the claim that we are *essentially* organisms in her 2006b.

[19] And on some accounts of St. Paul's discussion of a glorified body, the resurrected immortal body will be transformed in such a way that it shouldn't be considered a *living* organism.

devoid of material bodies. Aquinas, however, believed that we were each a composite of soul and matter and that if only our soul will be in Purgatory then we will not. He declares "I am not my soul"[20] (1993, 192-193). That is why he admits that our prayers actually are heard not by St. Peter but just by his soul (1993, 192-193).[21] A good question is what benefit Purgatory provides for you if *you* are not there. You are not the one being purged or reformed. The appeal might be that, come resurrection, you inherit a reformed soul that serves you well. Still, since Purgatory probably involves some discomfort, there arises the question of fairness to the soul who suffers for what the human being had done earlier.[22]

More troubling is that if the disembodied soul can think in Purgatory, it should be able to think prior to that posthumous disembodied state when it earlier configured matter. If the soul *and* the human being can both think, that would plague us with a

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[20] Eleanore Stump disagrees with this reading of Aquinas and claims he held the position similar to the one that we have argued for in which the person that had earlier been alive is in Purgatory with but with a single part. She writes "Similarly, it *is* true that on Aquinas's account a soul is not identical to a human being, but a human being can exist when he is composed of nothing more than one of his metaphysical constituents, namely his form or soul" (2003, p. 53). Where we disagree with Stump is that she sees the relation between the soul and the disembodied human being as a form of constitution. We don't think constitution will work here. If the human being is constituted by a soul after death, what constituted it before? It couldn't be that the soul constituted the embodied human being. The only alternative is that the soul/matter composite did. But the soul/matter composite just is the human being!

[21] Aquinas. ST I q. 89 a.1 and a.8

[22] See Koch-Hershenov and Hershenov's 2006 article for details about the problems Purgatory poses for the view that we are essentially animals.

hylomorphic version of the much discussed problem of too many thinkers.[23] However, if the soul can't think on its own but only the human being think, though in virtue of the soul, this extra thinker can be avoided.[24] But then for thought to occur when your soul is in Purgatory you would have to be there. That means the human being is in Purgatory in a bodiless form. There would be an immaterial human being whose only proper part is an immaterial soul. Readers may find it hard to grasp the relation and difference between the immaterial human being and the immaterial soul co-existing in the absence of any material differences.[25] Yet the soul theorist is not alone in such a predicament – if it is that. There is an analogue for the materialist. The materialist who believes in spatially coincident objects will have to accept that the tree can lose all of its branches and become spatially coincident with the trunk.[26] There would be no physical difference

[23] A good deal of the discussion of this problem can be traced back to Olson's treatment (1997, pp. 79-80, 97-102).

[24] The analogue would be the materialist's person thinking in virtue of a brain which itself is not a subject of thought, i.e., the brain is not a thinker that refers to itself, plans its future etc.

[25] See Olson's discussion of the "problem of thinking soul" (2001, pp. 76-77). Olson examines the analogue problem in the type of Cartesian dualist who identifies people as a compound of body and soul. He complains that they are "suffering from a kind of ontological double vision." We have tried to take some of the 'sting' off Olson's critique of a human being with but a single proper part in our 2006 paper on personal identity and Purgatory.

[26] Shoemaker appears to believe that the problems of spatial coincidence will be avoided by Four-Dimensionalism p. 71. But the same problem will arise if the tree never had any branches and shares all its temporal stages with the trunk. One would still want to be able to say that the tree could have had branches and that distinguishes it from the entity with which it shared every stage. See E.J. Lowe's account of this problem (2002, pp. 65-66). And the Four-Dimensionalist is also plagued by a an analogue of the Three-Dimensionalist problem of too many thinkers. This is because the Four-Dimensionalist understands the person stages to be persons (Lewis, 1983, p.76) which can think as can the maximal person that is the sum of person stages (Schectman, 1996, pp. 9-12).

between the two but they both exist as distinct entities because of their modal and historical differences. The tree had branches and can acquire them again, the trunk cannot. Likewise for the soul and human being. There would obviously be no physical difference between the two. But the human being had a material body and can acquire such again post-resurrection, while the soul had and can again configure a material body.[27]

We admit it may at first seem mind boggling how an immaterial human being can be connected to an immaterial soul.[28] Yet we think if readers assent to the existence of an immaterial entity such as the soul in the first place, we haven't provided them with a new reason for concern. Those readers who believe in soul/body interaction, immaterial angels in communication with each other, or an immaterial God interacting with an immaterial soul in Purgatory, should not blanch at the prospect of an immaterial human being intimately connected to its immaterial soul.

The moral of the above story is that if the human being can later exist without being alive that should make readers – at least, Catholic ones - more receptive to the embryo earlier existing without being alive. There are also compelling secular, biological reasons for maintaining that the early embryo exists without being alive. And this prospect of early existence in the absence of life can make the just offered account of Purgatory seem less

[27] If we are to speak here of the soul and the tree trunk as parts, we must drop the standard mereological claim that something must have at least two proper parts (Simons, 1984, p. 26). For X to be a proper part of Y, it must only be possible for there to be some Z that will combine with X to compose Y.

[28] Still, this may be easier to grasp in the case of the inanimate human being and soul since it doesn't involve two physical entities in the same place as in the case of the trunk and tree.

anomalous. The biological basis for our claim that the early embryo taken as a whole is not alive is that the cells of the embryo don't cooperate for the benefit of the whole in the way that is typical of a multi-cell organism like the reader. An organism functions as a unit, maintaining homeostasis, metabolizing food, excreting waste, assimilating oxygen, maintaining its boundary etc. The particular cells (blastomeres) in the early embryo are doing all of this individually but not as a whole. In the first week there is no growth as the cells rely upon the original resources of the mother's egg. The cells get smaller with each division. If one cell is sick or injured, the others don't come to its aid to fight disease or engage in repair etc. as do the parts of the reader's body. Nor are there organ systems in the embryo serving the entire entity as there are with the reader's respiratory, circulatory, nervous systems etc. But these absences are not reasons to deny that there is an object composed of a multitude of one-cell organisms any more than they would be to deny that my table, computer or a cheerleader pyramid are composite objects. Keep in mind that the cheerleader organisms composing the pyramid can be in contact, communicate and coordinate themselves without composing a giant organism.[29] We suggest that any contact, communication and cooperation of the smaller cells in the early

[29] We maintain that the contact, communication and cooperation of the smaller cells in the early embryo are also insufficient to render the embryo a multi-cellular organism. Likewise, for various kinds of the cells cultured in a lab. Skin cells and neurons can grow and connect up and form patches of skin and webs of neurons without those *unified* entities meeting the criterion for being organisms. That communication and coordination between cells isn't a sufficient condition for their composing a multi-cell organism is evident from considering the possibility that the sperm and egg were chemically signaling each other. There could conceivably even be a species where a particular egg is destined to be fertilized by a particular sperm, no other gamete could effectively take the place of either. They may be involved in a chemical "courting" long before they are in contact but we surely wouldn't say they were a single organism despite the telos.

embryo is also insufficient to render the embryo a multi-cellular organism. Nevertheless, there is still sufficient unity for something to exist as a composite object without it being alive.[30] We can accept the claim Patrick Lee endorses that "fertilization is the process whereby two sex cells (gametes) fuse together to *create a new individual* with genetic potentials from both parents (2004, p. 27)." We certainly wouldn't deny that the early embryo has a telos for when in the proper circumstances it develops into an organism. The cells behave as if that is their goal. But our cheerleaders too can have a goal of constructing their pyramid in a certain way without that aim transforming them into a giant organism. So our conclusion is that metaphysicians and pro-lifers can accommodate the unity of the early embryo (and the cheerleader pyramid) without changing the meaning of "being alive."

A thought experiment can offer further support for our contention that one can exist without being alive. Imagine that many parts and functions of someone's body (but not our cerebrum) were gradually replaced by inorganic prosthetics and devices. These were connected to nerve endings and thus under the control of the upper brain, the cerebrum. With too much inorganic part replacement – an artificial heart, mechanical lungs, prosthetics for one's limbs, dialysis machines taking over the job of kidney and so on – there is reason to conclude that a living organism is no longer present. But the same person is still there since left intact is a functioning cerebrum which has given rise to uninterrupted thought. That person thinking with the cerebrum has acquired a greater amount of inorganic than organic parts. But there is no reason to say that the soul doesn't configure that human being/person. One could tell this story of soul configuration in two ways. The first is that the human being is maimed and the inorganic parts are not part of it. The soul would configure the few organic parts that have not

[30] Some readers may likewise hold that the human body can continue to exist as a lifeless corpse.

been replaced. Still, the resulting person and system wouldn't satisfy the account of being an organism given that so many of its vital organs were replaced. The second way to tell the story is that since the person/human being controls those inorganic parts, its soul configures them and they are parts of the human being/person's cyborg-like body. In this scenario, the hylomorphic thinker may be able to argue that his soul configures the inorganic matter and it is too part of his body. In either case, one still exists without being alive.[31]

The last reason why the soul theorist shouldn't insist on the early embryo being an organism is that at the one-cell stage the only organism the human being could be is the zygote. But if the zygote is essentially an organism then it has the persistence conditions of a one-cell organism. And cells go out of existence when they divide and thus cease to be alive when they do so as we saw in the earlier discussion of the amoeba. We are not begging any questions here and insisting that zygotes are essentially one-cell organisms and thus stipulating that they couldn't become two-cell and then three-cell organisms. Rather, we are insisting that if zygotes are organisms that are essentially alive then they persist as long as do the same life processes in which they are caught up. It is a misuse of the phrase "same life processes" to say that the two cells produced by fission and the precursor zygote both belong to the same life processes. To see this, contrast zygotic division with the cell division in your adult body. Both the precursor and the post-fission cells are caught up in the same life processes of the multi-cell organism that is you. The two-cell and three-cell embryo don't function as a living unit. The embryo doesn't keep its temperature, gases and pressure within safe homeostatic parameters; its component cells don't participate in a shared metabolic process; and if two of its three cells are

[31] Thought experiments involving our brain or cerebrum being removed for transplant or kept in a vat would also be cases in which we continued to exist but without any longer being alive.

destroyed, the remaining cell is left unaffected. If readers lost any 2/3 of their bodies, it is quite the understatement to say that their remaining 1/3 would be affected.[32]

The co-location solution that we earlier offered for the puzzle posed by twinning is not available here in the case of the zygotic division since the result isn't two embryos but a single two-cell embryo. What the soul theorist should do is to understand the zygote as being contingently rather than essentially an organism. "Organism" should be seen as a phase sortal. Compare this with the phase sortal "professor" or "student." Most readers of this paper are identical to either a student or professor. But neither is essentially a student or professor. That is, they don't go out of existence when they graduate or retire. The property of being a student or professor is not essential to any of our readers. We suggest that the same is true regarding the human being and the organism. The zygote is an organism but it isn't essentially an organism. It can survive the loss of the property of being alive. The soul configures matter that results in living beings at one time, but not at another. After the zygote divides, the soul configures a mass of tissues, each of which is composed of living cells, but this human being is not again a living organism until some later time – perhaps the period 2-3 weeks after fertilization that many theorists point to.[33]

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[32] If we are wrong about the very early embryo *not* being an alive, it won't matter that much for our thesis as long as we can hold on to the claim that the human being is only *contingently* a living animal. This would enable us to explain how the human being can exist without being alive in Purgatory or with a glorified body or survive the loss of a living body in the aforementioned thought experiments.

[33] See references at note 17. Another way to look at the possibility of the embryo not being alive is from the bodily view of the identity. On this view the organism is a phase of the body. The body survives death when it ceases to be alive i.e., to be an organism. This account of the body is controversial but we're mostly interested in just illustrating the phase sortal view of the organism.

Except at the zygotic stage, the early embryo is not alive on our hylomorphic account.[34] We can paraphrase what people mean by saying the early embryo died just like we can talk of brain death. Brains are organs, not organisms, and thus not alive. But they can cease to function when too many of their component living cells die. Likewise for the pre-gastrulation or pre-circulatory system embryo.

We can now fulfill an earlier promise and connect this discussion back to Shoemaker's account of death of the embryo through fusion. Since the embryo is not alive at the time of fusion, Shoemaker is mistaken to demand to know where are the dying and dead bodies of the embryonic human being that fused.

VII. Why this Soul Theory is Not Ad Hoc

Shoemaker is worried that souls are "slippery little suckers" and their advocates could tinker with them in ways that make them avoid the problems he diagnosed. Others may put the worries in terms of soul theory being ad hoc. There is a concern that the countermoves will have an air of theory-saving desperation to them. We don't think this charge is always fair to the soul theorist. The soul theorist is not like the scientist making predictions and then propping up his theory with epicycles when the predictions fail to come about. While Aquinas made claims about the timing of our nature that were based on what we take today to consider to be wildly false biology, he didn't make any theoretical predictions about twinning and fusion that have to be abandoned. More importantly, none of the hylomorphic theorist's fundamental

[34] To say that a person or human being exists is not the same as to claim that it is alive. Hershenov provides a more detailed semantic account of the relationship between life and existence in his 2006 paper on the death of a person.

principles have to be rejected to accommodate the conventional wisdom of contemporary biology.

It is important to distinguish modifying a well-developed theory and exploring uncharted waters. The soul theory satisfies the second description. If there are puzzles about twinning and fusion, we don't think there is anything suspect about coming up with ways that can explain the fate of the soul if we do so by staying loyal to the most important metaphysical, theological and moral principles. We are somewhat confident that we have done that. We have not abandoned the view that that souls are simple and immaterial, that souls configure matter, that embryos and bodies are ensouled matter, that we were zygotes, that we are organisms, that substances can be individuated, that the identity of the pre and post-fissioned entities is not arbitrary, that ensoulment is miraculous, that God is good and that He would want the death of innocents to be avoided. We have also held onto the belief that Purgatory exists, that its denizens are bodiless, and that someday we'll have a resurrected body. Unlike a number of contemporary theorists, we have not made exceptions to the classical logic of identity to deal with twinning or embraced a counterintuitive theory of temporal parts. Even in our defense of co-location we didn't engage in special pleading for human beings but pointed out how the artifact world could contain spatially coincident entities of the same kind. We believe we have been more loyal to the biological facts than other defenders of early ensoulment. Of course, what we have done is not all commonsense, but rarely does metaphysics meet that requirement.[35]

[35] We would like to thank two anonymous reviewers for their comments.

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