Reduce, Reuse, or Recycle? Animalism vs. Thomistic Hylomorphism

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Jeremy W. Skrzypek
Ohio Dominican University

Abstract. Animalism and Thomistic hylomorphism share a lot of common ground. The primary disagreement between the two is Thomistic hylomorphism's claim that every human animal possesses an immaterial part, a rational soul, which serves as the metaphysical ground for her identity over time. In this paper, I argue that Thomistic hylomorphism's commitment to a non-reductionist, further fact theory of personal identity over time allows it to avoid two major worries for animalism: the problem of indeterminacy and the problem of fission. This leaves animalists with a kind of dilemma: either forego reductionism and reconceptualize the continuity of a human organism's life in non-reductionist terms, in which case animalism turns out to be not very different at all from a kind of hylomorphism, or continue to conceptualize the continuity of a human organism's life in reductionist terms, in which case Thomistic hylomorphism has the advantage over animalism in that it avoids two major worries for its closest competitor.

I. Introduction

Animalism is the view according to which we are human animals, or, more precisely, that each of us is numerically identical to a particular human organism. Animalism is often accompanied by three further claims: that we are essentially human animals, that animals are wholly material, and that we possess biological persistence conditions. To say that we are essentially human animals is to say that we could never be anything other than the animal we are. To say that animals are wholly material is to say that no animal possesses any immaterial parts. To say that we possess biological persistence conditions is to say that "one survives just in case one's purely animal functions – metabolism, the capacity to breathe and circulate one's blood, and the like – continue."[1] There are versions of animalism which deny one, two, or all three of these latter claims, but the view that I will consider here is the version of animalism that accepts all four, which has come in the literature to be known as "standard animalism"[2], "strong

[1] Eric T. Olson, *The Human Animal* (Oxford: Oxford University Press, 1997): p. 16
[2] Jeremy W. Skrzypek and Dominic Mangino, "Should Animalists be 'Transplanimalists'?", *Axiomathes*, Vol. 31, No. 1 (Apr., 2020): p. 106.

animalism"[3], "robust animalism"[4], "latter-day animalism"[5], "the one true animalism"[6], or simply, "the biological approach"[7].

According to Thomas Aquinas's hylomorphic understanding of the human person, we are rational animals, or, more precisely, each of us is numerically identical to a particular rational animal.[8] Like other composite material substances, each of us is essentially composed of both matter and form. And like other living composite material substances, each of us is essentially composed of both body and soul.[9] The sort of form or soul that a human person possesses is a rational soul, which serves as the source not only of the person's rational capacities but also her more basic vegetative and sentient capacities.[10] The rational soul is the primary principle of unity within the human person, bringing together her various parts and capacities into a unified, singularly acting whole.[11] According to Thomistic hylomorphism, the rational soul unifies the material parts of the human person by serving as the metaphysical ground for their existence and identity. That each part exists, that it is the sort of part that it is, and that it is the specific part that it is, are all grounded in the existence, nature, and identity of the person's rational soul.[12] And the

[3] Eric T. Olson, "What Does it Mean to Say That We Are Animals?", *Journal of Consciousness Studies*, Vol. 22, No. 11-12 (Jan., 2015): p. 98.
[4] Matt Duncan, "Animalism is Either False or Uninteresting (Perhaps Both)", *American Philosophical Quarterly*, Vol. 58, No. 2 (Apr., 2021): pp. 187-200.
[5] Patrick Toner, "Hylemorphism, Remnant Persons and Personhood", *Canadian Journal of Philosophy*, Vol. 44, No. 1 (Mar., 2014): p 76.
[6] Allison Krile Thornton, "Varieties of Animalism", *Philosophy Compass*, Vol. 11, No. 9 (Sep., 2016): p. 516.
[7] Olson, *The Human Animal*, pp. 16-21 and Chapter 6; Andrew M. Bailey, "Animalism", *Philosophy Compass*, Vol. 10, No. 12 (Dec., 2015): pp. 868-869.
[8] "we say that a human being is a rational animal", Aquinas, *DEE*, Ch.1; "for any human being, insofar as he is a human being, it pertains to him to be both rational and animal, and whatever else falls under the definition of human being", Aquinas, *DEE*, Ch. 2. All references to the works of Aquinas are to the Latin versions of the texts available at http://www.corpusthomisticum.org/iopera.html. All English translations are my own.
[9] See, for example, Aquinas, *ST*, I, Q. 75, Prologue and Aquinas, *ST*, I, Q. 76, A. 4.
[10] See, for example, Aquinas, *ST*, I, Q. 76, A. 4.
[11] See, for example, Aquinas, *ST*, I, Q. 76, A. 4 and A. 5.
[12] This is perhaps the most striking and controversial aspect of Aquinas's hylomorphic theory of the human person. It entails that no material part of the human person can survive separation from the whole. For a recent defense of this aspect of Aquinas's ontology, see Patrick Toner, "Emergent Substance", *Philosophical Studies*, Vol. 141, No. 3 (Dec., 2008): pp. 281-197. This particular aspect of Thomistic hylomorphism does not play a crucial role in the arguments presented in this essay, and so I will say no more about it in what follows. However, it is worth pointing out that, as a result of its commitment to this aspect of Aquinas's thought, Thomistic hylomorphism turns out to be a

rational soul itself is united to the body not as an additional substance operating on it from the outside, but as the formal principle that makes it the body that it is. On Aquinas's understanding of the human person, a human person is not her soul, nor is she her body. Rather a human person is the one material substance, the rational animal, composed of both.[13] And we persist by virtue of the continued possession of the same rational soul, which is indicated by, but not reducible to, the continued presence of the various capacities to which it normally gives rise.[14] According to Thomistic hylomorphism, the rational soul is also capable of surviving the death of the body, capable of subsisting and supporting rational thought in a separated state.[15] And the rational soul remains in this separated state until the resurrection, at which point it is reunited with the body it earlier enformed.[16]

Animalism and Thomistic hylomorphism share a lot of common ground. According to both, each of us is identical to a particular human animal. According to both, the one and only thinker of my thoughts is that animal.[17] And, according to both, in most circumstances, our identity over time can be tracked by following biological continuity. According to both

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rather unique further fact theory of the human person. For, according to Thomistic hylomorphism, the rational soul is not something added to the material parts of the human person, but a deeper, underlying principle which is meant to explain the existence, nature, and identity of those parts.

[13] See, for example, Aquinas, *ST*, I, Q. 75, A. 4.

[14] For the claim that the soul is not reducible to any of its powers, see, for example, Aquinas, *ST*, I, Q. 77, A. 1. For a defense of the claim that, on a Thomistic understanding of the human person, human persons persist by virtue of the continued possession of the very same soul, the persistence of which is indicated by, but not reducible to, the continued presence of the various capacities to which it normally gives rise see, for example, Jason T. Eberl, *The Nature of Human Persons: Metaphysics and Bioethics* (Notre Dame, IN: University of Notre Dame Press, 2020).

[15] See, for example, Aquinas, *ST*, I, Q. 75, A. 2.

[16] Whether the *person* survives her death by virtue of the survival of her soul, or whether she must await the resurrection for any kind of personal afterlife, is a matter of some debate among recent proponents of Thomistic hylomorphism. And among those who think that the person does survive her death by virtue of the survival of her soul, there is further debate over whether the person ceases to be or remains a rational animal in such a state. Unfortunately, I do not have the space to explore this issue further here. But see Jeffrey E. Brower, *Aquinas's Ontology of the Material World* (Oxford: Oxford University Press, 2014): Chapter 13 for an excellent overview.

[17] "neither the eye nor the hand can be said to subsist through itself; nor can either for that reason be said to operate through itself. Hence, the operation of the parts is attributed to the whole through each part. For we say that a human being sees with the eye, and feels with the hand, and not in the same sense as when we say that what is hot gives heat by its heat. For heat, strictly speaking, does not give heat. We may therefore say that the soul understands, as the eye sees, but it is more correct to say that a human being understands through the soul", Aquinas, *ST*, I, Q. 75, A. 2, Ad. 2. See also Aquinas, *ST*, I, Q. 76, A. 1, Co.

animalism and Thomistic hylomorphism, neither the at-work or in-hand capacity for conscious self-reflection or any other psychological states or activities is required for our identity over time, and this is so because neither is required for the animal's identity over time. On both views, we are present whenever the animal is. As a result, each of us was once an unthinking fetus, and each of us could survive falling into a persistent vegetative state, but none of us could ever become a lifeless corpse.[18]

So what, then, are the major disagreements between animalism and Thomistic hylomorphism? Is animalism merely an updated, streamlined hylomorphism? Is Thomistic hylomorphism merely a clunky, outdated animalism? Some authors have argued that Thomistic hylomorphism's emphasis on the rational soul as the source of its rational, sentient, *and* vegetative capacities allows for more flexible persistence conditions for human animals, perhaps allowing human animals to survive in certain scenarios that they otherwise would not on animalism.[19] And so in that way Thomistic hylomorphism could be seen as denying claim three above, the claim that each of us possesses strict biological persistence conditions. But the primary disagreement between animalism and Thomistic hylomorphism is Thomistic hylomorphism's denial of claim two above. For, according to Thomistic hylomorphism, every human animal possesses an immaterial part: a rational soul. Indeed, every living thing possesses an immaterial part. For, on a hylomorphic framework, all living organisms are essentially composed of both matter and form, body and soul. Despite their significant common ground,

[18] For a defense of the claim that, on a Thomistic understanding of the human person, each of us was once an unthinking fetus, each of us could survive falling into a persistent vegetative state, but none of us could ever become a lifeless corpse, see Patrick Toner, "Hylemorphic Animalism", *Philosophical Studies*, Vol. 155, No. 1 (Aug., 2011): pp. 65-81. The key move here is to say that while one needs to possess a capacity for rationality in order to be considered a rational animal, an active, natural capacity for rationality will do, where by active, natural capacity we mean being of the kind whose members typically develop the in-hand and at-work capacity for rational operations, or possessing an internal developmental trajectory toward the exercise of rationality. A fetus and a patient in a persistent vegetative state possess an active, natural capacity for rationality, whereas a corpse does not (for more on this see Eberl, *The Nature of Human Persons*, especially pp. 148-154).

[19] See citations below.

then, there are some key differences between animalism and Thomistic hylomorphism. Do those differences make a difference? Does Thomistic hylomorphism provide any theoretical advantages over animalism? Does animalism successfully avoid any serious concerns for Thomistic hylomorphism?

Several contemporary advocates of Thomistic hylomorphism have recently argued that because of the flexibility of its persistence conditions for human animals, or because of its commitment to a further immaterial component to the human person, or because of certain resources available within its larger hylomorphic framework, Aquinas's hylomorphic theory of the human person possesses an array of theoretical advantages over animalism.[20] In this paper, I

[20] It has been argued, for instance, that hylomorphism's account of substantial change takes the sting out of the dead body problem (see Patrick Toner, "Hylemorphic Animalism", *Philosophical Studies*, Vol. 155, No. 1 (Aug., 2011): pp. 70-71), that Thomistic hylomorphism's unicity doctrine, according to which in any substance there is just one substantial form, and its Boethian account of personhood, according to which the term 'person' refers to "an individual substance of a rational nature", allow it to provide non-eliminativist solutions to the thinking parts and remnant person problems (see Toner, "Hylemorphic Animalism", pp. 71-71 and Patrick Toner, "St. Thomas Aquinas on the Problem of Too Many Thinkers", *The Modern Schoolman*, Vol. 89, No. 3-4 (Jul.-Oct., 2012): pp. 209-222 for a hylomorphic solution to the thinking parts problem; see Toner, "Hylomorphism, Remnant Persons, and Personhood" for a hylomorphic solution to the remnant person problem), that by grounding an innate, natural capacity for the development of overt psychological capacities in the person's substantial form, her rational soul, hylomorphism better captures the importance of these capacities for our continued identity over time and allows us to say that each of us is essentially a person (see Toner, "Hylomorphic Animalism", pp. 79-80; Jason T. Eberl, *The Nature of Human Persons: Metaphysics and Bioethics* (Notre Dame, IN: University of Notre Dame Press, 2020): pp. 19-20, 101-102, 138), that hylomorphism can accommodate both the transplant intuition, according to which we would go with our transplanted cerebrum, and the vegetable intuition, according to which we could survive falling into a persistent vegetative state (see David B. Hershenov, "A Hylomorphic Account of Thought Experiments Concerning Personal Identity", *American Catholic Philosophical Quarterly*, Vol. 82, No. 3. (Summer 2008): pp. 491-196; David B. Hershenov, "Soulless Organisms? Hylomorphism vs. Animalism", *American Catholic Philosophical Quarterly*, Vol. 85, No. 3 (Summer 2011): pp. 468-473; David B. Hershenov, "Evaluating Hylomorphism as a Hybrid Account of Personal Identity", *Quaestiones Disputatae*, Vol. 10, No. 2 (Spring 2020): pp. 96-102; Mark Spencer, "A Reexamination of the Hylomorphic Theory of Death", *The Review of Metaphysics*, Vol. 63, No. 4 (Jun., 2010): pp. 856-860; Eberl, *The Nature of Human Persons*, pp. 48-54), that hylomorphism may allow a human person to survive wholesale inorganic part replacement (see Hershenov, "A Hylomorphic Account of Thought Experiments Concerning Personal Identity", pp. 497-498), that hylomorphism allows for the possibility that a human person could survive the loss of functionality in her brainstem in those cases in which the higher brain retains its functionality (see Jason T. Eberl, "Dualist and Animalist Perspectives on Death: A Comparison with Aquinas", *The National Catholic Bioethics Quarterly*, Vol. 7, No. 3 (Autumn 2007): pp. 486-488), that the rational soul might be present in utero before the developing embryo meets the requisite biological conditions for individual living human organism (see Hershenov, "A Hylomorphic Account of Thought Experiments Concerning Personal Identity", pp. 500-501; David Hershenov and Rose J. Koch-Hershenov, "Fission and Confusion", *Christian Bioethics*, Vol. 12, No. 3 (Dec., 2006): pp. 246-249), and, finally, that hylomorphism's commitment to the subsistence of the rational soul better allows for the possibility of personal immortality in that may allow us to survive our deaths as *disembodied* rational animals (see Eberl, *The Nature of Human Persons*, pp. 98-103; Allison

discuss two further advantages of Thomistic hylomorphism over animalism which are based not primarily on any particular resources available within its larger hylomorphic framework (such as its commitment to prime matter or to the unicity of substantial form or to the subsistence of the rational soul), nor its ability to offer alternative persistence conditions for human animals, but on its commitment to a non-reductionist, further fact theory of personal identity over time. I will argue that Thomistic hylomorphism's commitment to a non-reductionist, further fact theory of personal identity over time allows it to avoid two major concerns for reductionist theories: the problem of indeterminacy and the problem of fission. Understood as a reductionist theory of personal identity over time, animalism faces its own versions of these two concerns. And so this leaves animalists with a kind of dilemma: either forego reductionism and reconceptualize the continuity of a human organism's life in non-reductionist terms to avoid the aforementioned concerns, in which case animalism turns out to be not very different at all from a kind of hylomorphism, or continue to conceptualize the continuity of a human organism's life in reductionist terms, in which case Thomistic hylomorphism has the advantage over animalism in that it avoids two major concerns faced by its closest competitor.

II. Two Problems for Reductionist Theories of Personal Identity Over Time

A reductionist theory of personal identity over time is any theory that holds that personal identity consists in, and is thus reducible to, certain other more basic facts, facts which can be enumerated and specified without any explicit reference to the person whose identity is to be explained.[21] The most common reductionist theories are those that hold that personal identity consists in biological or psychological continuity and is thus reducible to certain other, more

Krile Thornton, "Disembodied Animals", *American Philosophical Quarterly*, Vol. 56, No. 2 (Apr., 2019): pp. 203-217).

[21] In distinguishing between reductionist, non-reductionist, and further fact views, and in distinguishing between two types of further fact views, I'm drawing heavily here on Derek Parfit, *Reasons and Persons* (Oxford: Oxford University Press, 1984), especially pp. 210-213.

basic physical or mental facts. A non-reductionist theory of personal identity over time is any theory that denies that personal identity consists in, and is thus reducible to, biological continuity, psychological continuity, or any other physical or mental facts. According to non-reductionist theories, the identity of a person consists in some further fact beyond her biology and her psychology, such as the continued possession of an immaterial soul.[22] Some non-reductionist, further fact theories identify the person with this further fact, such as pure substance dualists who identify the person with her immaterial soul. Other non-reductionist, further fact theories take this further fact to be merely an additional part or aspect of the person, such as compound substance dualists and hylomorphists, who identify the person with a body/soul composite.

Reductionism about personal identity is, then, similar to, but distinct from, certain other varieties of reductionism, such as reductionism about the mental, according to which facts about the mental are reducible to physical facts, and mereological reductionism, according to which facts about composite wholes are reducible to facts about their parts. Importantly, one could be a reductionist about personal identity without being a reductionist about the mental or about parts and wholes. For example, animalism, a biological reductionist theory of personal identity, is compatible with both property dualism (non-reductionism about the mental), and non-reductive physicalism (mereological non-reductionism).

[22] Importantly, positing the existence of an immaterial soul is only one way of spelling out what this further fact might be. According to Lynne Rudder Baker, for example, the identity of a human person over time is determined by his or her continued possession of the very same first-person perspective, where a first-person perspective is irreducible to any other physical or mental facts about the person (see, Lynne Rudder Baker, "Personal Identity: A Not-So-Simple Simple View", in Georg Gasser and Matthias Stefan (eds.), *Personal Identity: Complex or Simple?* (Cambridge: Cambridge University Press, 2012): pp. 179-191.

There are two well-known concerns faced by reductionist theories of personal identity over time: the problem of indeterminacy and the problem of fission.[23] First, reductionist theories must contend with the possibility that there might be cases in which it is indeterminate whether personal identity holds. There could be cases in which even after we identify all of the relevant physical or mental facts, it is still unclear whether or not the person has survived. The reason why reductionist theories of personal identity over time are committed to the possibility of indeterminacy is precisely because they reduce personal identity to biological or psychological continuity, to some more basic set of physical or mental facts. The problem is that there will inevitably be cases in which biological or psychological continuity is maintained only to a certain degree or in which only some subset of the relevant physical or mental facts continue to hold. And, in such cases, it will be unclear whether the degree of continuity or the number of relevant facts maintained is sufficient to maintain the identity of the person.

So, for example, let's say that personal identity consists in some kind of psychological continuity. Whether you survive any given scenario is determined by whether the person at the other end of that scenario retains enough of your psychology or whether that person's psychology retains a sufficient number of causal connections to your own. But how much of your psychology must be retained to maintain psychological continuity? How tight must the causal connections be between your psychology and that later person's psychology for you to be numerically identical to him or her?

Notice that the indeterminacy involved here is not merely epistemic. It is not merely that we may, in some cases, be unable to reliably determine whether the degree of continuity or the number of relevant facts maintained is sufficient to maintain the identity of the person. If

[23] For some helpful discussions of these two standard objections to reductionist theories, see Georg Gasser and Matthias Stefan, "Introduction", in Gasser and Stefan, *Personal Identity: Complex or Simple?*, pp. 1-17 and Harold W. Noonan, *Personal Identity*, Third Edition (New York: Routledge, 2019): Chapters 6 and 7.

personal identity is reducible to these more basic facts, then there is no *further* fact that we could hope to discover which could determine whether the person has survived in these sorts of cases. Any proposal specifying the degree of continuity that is sufficient or the number of facts that need obtain would seem to be a matter of mere stipulation, a matter of decision, not discovery. And that strikes most of us as deeply counterintuitive. It seems that there really ought to be a determinate answer in any possible scenario in which I could find myself as to whether I will survive that scenario.[24]

The problem of fission begins with the observation that biological or psychological continuity, and the relevant physical or psychological facts which are said to constitute personal identity over time, could, in principle, be preserved or maintained along more than one path. So, for example, let's say that personal identity consists in some kind of psychological continuity. Let's further suppose that if a human person's cerebrum, the principal organ which houses her psychology, were to be transplanted to another body, the human person would go with it. Finally, let's also suppose that each cerebral hemisphere contains exactly half of the person's psychology, or at least enough of that psychology to maintain her identity in the absence of the other.

Putting all of these suppositions together, let's now imagine that a human person were to undergo a procedure in which her cerebrum were removed from her body, split in two by carefully severing the corpus collosum, and each half were successfully transplanted to another, cerebrum-less human body. In such case, what will have happened to the human person with which we began? Let A refer to the human person with which we began and B and C refer to each of the recipients of its cerebral hemispheres. What is the relationship between A, B, and C?

[24] As Derek Parfit, a key proponent of reductionism, himself admits: "When it is applied to ourselves, this Reductionist claim is hard to believe. In such imagined cases, something unusual is about to happen. But most of us are inclined to believe that, in any conceivable case, the question 'Am I about to die?' must have an answer. And we are inclined to believe that this answer must be either, and quite simply, Yes or No. Any future person must be either me, or someone else" (Parfit, *Reasons and Persons*, p. 214).

Logically, it appears that we have four main options: A is identical to both B and C, A is identical to B but not C, A is identical to C but not B, or A is identical to neither B nor C.

Because B and C each contain exactly half of the person's psychology, or at least enough of the person's psychology to maintain her identity in the absence of the other, it seems that each is an equally good, or at least a sufficiently good, candidate for being A. If each half really does contain just as much of the person's psychology as the other, or enough of the person's psychology to maintain her identity in the absence of the other, and if personal identity is simply a matter of psychological continuity, then it is unclear how either one of them could fail to be identical to A and the other succeed. It seems that there would be no fact about either recipient which is not also true of the other that could make one of them uniquely identical to A.

But it also seems implausible to say that A is identical to both B and C, and for two reasons. First, because B and C could have incompatible properties. For example, B could be clean-shaven and C could have a beard. But no one person can be both clean-shaven and bearded at the same time. And if B kills C, then A will be both dead and alive. But nothing can be both dead and alive at the same time. Second, B and C cannot be identical to each other because they will immediately have different mental states upon successful transplantation. And the mental states in the one will not be accessible to the other. There would be no psychological continuity between the two halves, and so, on any view which holds that personal identity is reducible to psychological continuity, they could not be the same person.

And so it seems that the only remaining option for the reductionist is to say that A is identical to neither B nor C, that A has perished as a result of the procedure. The problem with saying that A is identical to neither B nor C, however, is that B and C both seem to have everything that it takes to be identical to A. Each is psychologically continuous with A: the

psychological states of each maintain a kind of causal continuity with the psychological states present in A. Indeed, if not for the other, it seems that B or C would clearly be identical to A. So how could the presence of the other make it the case that the one is not identical to A? In the words of Derek Parfit, "how could a double success be a failure?"[25]

III. Biological Reductionism

Animalism is typically understood as a reductionist theory of personal identity over time, inasmuch as it holds that personal identity consists in, and is thus reducible to, biological continuity.[26] According to animalism, each of us is numerically identical to a particular human animal. The identity of that animal over time consists in the continuity of its life. The life of an animal consists in the causal continuity of various vital functions or metabolic activities. And those vital functions and metabolic activities are understood as reducible to more basic causal interactions between the smallest parts of that animal. Consider, for example, Peter van Inwagen's animalism, according to which the identity of any living organism is a function of the continuity of its life and the continuity of an organism's life is a function of the "activity" of its parts:

> If an organism exists at a certain moment, then it exists whenever and wherever – and only when and only where – the event that is its life at that moment is occurring; more exactly, if the activity of the *x*s at t_1 constitutes a life, and the activity of the *y*s at t_2 constitutes a life, then the organism that the *x*s compose at t_1 is the organism that the *y*s compose at t_2 if and only if the life constituted by the activity of the *x*s at t_1 is the life constituted by the activity of the *y*s at t_2. Let us call this principle 'Life'.[27]

What is this activity of which a life is constituted? van Inwagen tells us that "talking of the 'activities' of things in this sense is no more than a way of talking about the changes they

[25] *Ibid*., p. 256.
[26] Recall that the sort of animalism that I am considering here is what is sometimes called "strong animalism", which holds not only that we are human animals, but also that we are essentially human animals, that animals are wholly material, and that we possess biological persistence conditions.
[27] Peter van Inwagen, *Material Beings* (Ithaca, NY: Cornell University Press, 1990): p. 145.

undergo."[28] On van Inwagen's account, then, the identity of a human animal over time consists in the continuity of its life, and the life of an organism is understood as nothing more than "the sum of a great many chemical processes".[29]

Eric Olson offers a similar account. He also grounds the identity of any living organism in the continuity of its life and the continuity of its life in certain "vital functions" performed by its parts: "If *x* is an animal at *t* and *y* exists at *t**, *x* = *y* if and only if the vital functions that *y* has at *t** are causally continuous in the appropriate way with those that *x* has at *t*."[30] And, like van Inwagen, Olson characterizes the life of an organism as "a special kind of event, roughly the sum of the metabolic activities the organism's parts are caught up in."[31]

Understood as a reductionist theory of personal identity over time, animalism is susceptible to the two major concerns for reductionist theories outlined above. First, because it reduces personal identity to biological continuity, to some more basic set of physical facts, it must also contend with the possibility that there might be cases in which it is indeterminate whether personal identity holds. According to animalism, the identity of a human animal over time consists in the continuity of its life, in the continuity of certain vital functions or metabolic activities. But how many of these vital functions or metabolic activities must be retained in order to preserve the life of the organism? If the vital functions or metabolic activities of a living human organism were to be gradually reduced, at what point would the animal die? To borrow a case from Olson, imagine that all of the organic parts of a living human animal's brainstem were to be gradually replaced with inorganic substitutes, without any interruption in the life processes orchestrated by that brainstem.[32] Olson holds that no animal could survive complete inorganic

[28] *Ibid*., p. 82.
[29] *Ibid*., p. 146.
[30] Olson, *The Human Animal*, p. 135
[31] *Ibid*., p. 136.
[32] *Ibid*., pp. 141-142.

part replacement or even complete inorganic part replacement of the parts of its brainstem, the control center for its coordinated biological functions.[33] And so at some point in this gradual replacement process the animal will have died. But when will this have occurred?

Notice once again that the indeterminacy involved here is not merely epistemic. It is not merely that we may, in some cases, be unable to reliably determine whether the degree of biological continuity or the number of vital functions or metabolic activities retained is sufficient to preserve the identity of the person. If personal identity is reducible to these more basic facts, then there is no further fact that we could hope to discover which could determine whether the person has survived in these sorts of cases. Any proposal specifying the degree of biological continuity that is sufficient or the number of physical facts that need obtain would seem to be a matter of mere stipulation, a matter of decision, not discovery. As van Inwagen himself admits,

> there could be a case in which, owing to it being indeterminate whether the activity of certain objects constituted a life, it was indeterminate whether a composite object was present. And there could be a case in which, owing to its being indeterminate whether a life now going on was the same event as a life that had been going on at an earlier time, it was indeterminate whether a currently existing composite object was the same object as one that had existed at an earlier time. A metaphysic that has these implications places its defenders in a rather difficult position.[34]

Second, concerning the problem of fission, while most fission cases are designed to problematize reductionist theories of personal over time that prioritize psychological continuity, animalism, understood as a reductionist theory of personal identity over time that prioritizes biological continuity, is also susceptible to this problem.[35] I can think of at least four possible biological fission cases which show this. Some of these cases are actual, some of them physically

[33] Ibid., pp. 125, 135.
[34] van Inwagen, *Material Beings*, p. 228.
[35] See also Anne Sophie Meincke, "Processual Animalism: Toward a Scientifically Informed Theory of Personal Identity", in Anne Sophie Meincke and John Dupre (eds.), *Biological Identity: Perspectives from Metaphysics and the Philosophy of Biology* (New York: Routledge, 2021): pp. 251-278.

possible, and some of them perhaps only metaphysically possible, but they all illustrate the relevant difficulty.

The first case is the case of monozygotic twinning.[36] Monozygotic twinning is the process by which identical twins come to be. Identical twins, unlike fraternal twins, can trace their history back to a single fertilized ovum or zygote. On those rare occasions when a human zygote successfully "splits", "divides", "separates", or "twins" early on in its development, the result is a pair of identical twin human embryos. Now, if individual human organisms begin to exist at or shortly after fertilization, then the zygote or early embryo that twins is an individual human organism. But if the zygote or early embryo that twins is an individual human organism, what happens to that organism when it twins? Does its life end and is the result two new human organisms? Does it carry on as one of the resulting embryos but not the other? Does it carry on as both?

The second case is the case of brain-body separation.[37] Imagine that a living human organism were to undergo a procedure in which several of its parts were successively amputated in such a way that this did not significantly impair the parts that remained. First the animal's arms are removed, then its legs, then its lower torso, then its upper torso, then its neck, until all that remains is its brain, the functionality of which, let us imagine, is retained by some sort of external assistance. Could a human animal survive such an operation and in such a condition? Several animalists have argued that a human animal could indeed survive being reduced in this way to nothing more than its brain, as long as its brain stem, the organ that serves as the control center for its coordinated biological functions, remains intact and functional.[38]

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[36] Olson discusses monozygotic twinning at pp. 90-93 of *The Human Animal*. Van Inwagen discusses it at pp. 152-154 of *Material Beings*.

[37] Olson discusses this sort of case in his "The Role of the Brainstem in Personal Identity", in Andreas Blank (ed.), *Animals: New Essays* (Munich: Philosophia Verlag, 2016): pp. 291-302.

[38] See, for example, van Inwagen, *Material Beings*, pp. 169-181 and Olson, *The Human Animal*, pp. 44-46, 131-135.

But Alan Shewmon has also argued that, in some cases, a human animal can remain alive even after the loss of functionality in his or her brain stem, that is, after total brain death.[39] So let's combine the two scenarios. Imagine that a fully-functional adult human animal were to undergo a procedure in which its whole brain were amputated in such a way that the functionality of its brain stem was retained but in in which the various life processes carried out in the rest of the body were also maintained. What would happen to the original human animal in this case? Would it go with its amputated brain, or would it survive the amputation of its brain in the body that remains? Would its life end and would there now be two new human animals? Would it somehow survive as both, as a kind of scattered organism?

The third case is the case of whole-brain fission.[40] Let's suppose that a living human organism can survive being reduced to nothing more than its functioning brain. But since a functioning cerebrum is neither necessary nor sufficient for the identity of a human animal, what would really be doing the work here is the brainstem. So let's suppose that a human animal may be able to survive being reduced to nothing more than its brainstem.

Let's also suppose that a living human organism can survive the loss of functionality of part of its brainstem. Some of its life processes may be hindered or cease in that case, but let's suppose that a sufficient number of those life processes would remain to keep the animal alive. Could a human animal survive the loss of functionality in as much as half of its brainstem? That's unclear. But let's suppose that this is at least in principle possible. Let's suppose that a human animal could survive with half of a functioning brainstem.

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[39] See, for example, D. Alan Shewmon, "The Brain and Somatic Integration: Insights into the Standard Biological Rationale for Equating 'Brain Death' with Death", *The Journal of Medicine and Philosophy*, Vol. 26, No. 5 (Jan., 2001): pp. 457-478.

[40] A similar case is described in Richard Swinburne, *Are We Bodies or Souls?* (Oxford: Oxford University Press, 2019): pp. 53-55.

Now, if a human animal can survive being reduced to nothing more than its brainstem, and if a human animal could survive with half of a functioning brainstem, we can run a double transplant fission case that plagues animalism just as much as it plagues psychological approaches. Imagine a human animal were to undergo a procedure in which its whole brain were removed, split right down the middle in such a way that each half maintained enough functionality to carry on a sufficient number of the animal's life processes to otherwise keep it alive, and each half were successfully transplanted to a different, brain-less body. What would happen to the original human animal in this case? Would it go with one half of its brain rather than the other? Would the procedure end the life of that animal? Or would the animal somehow survive in both bodies, once again as a kind of scattered organism?

A fourth possible biological fission case comes from Christian Munthe:

> Imagine that in a few hundred years humanity starts to colonise outer space and that, eventually, the colonisers on different planets gradually evolve biologically in quite different directions (due to different kinds of evolutionary pressure in differing environments). On one of these planets, natural selection leads to the result (after – say - 2,000,000 years) that humans on this particular planet actually procreate by division in a way similar to amoebas. However, in all relevant respects, they are still humans (they have our type of consciousness and physical features, and if their cells were to undergo meiosis, they would be able to procreate with us).[41]

While human animals do not currently reproduce asexually through binary fission, what Munthe's case asks us to consider is that it might be possible for human animals to come to have this capacity, either through environmental influences or through new technologies. And in such case it would be unclear what would happen to any human animal who reproduced in this way. Would it die in the process? Would it survive as one or the other of the human animals thereafter? Or would the life of that animal somehow continue on in both?

[41] Christian Munthe, "Divisibility and the Moral Status of Embryos", *Bioethics*, Vol. 15, No. 5-6 (Oct., 2001): pp. 387-388.

IV. Further Fact Solutions

There are two ways in which an animalist could respond to the problem of indeterminacy. First, she could argue that there is some non-arbitrary point at which the degree of biological continuity or the number of vital functions or metabolic activities preserved is sufficient or insufficient to preserve the life of a living organism. We may not know exactly what that non-arbitrary point is, and, indeed, we may never be in a position to know it. But it is open to the animalist to insist that there are facts in the world that make it metaphysical determinate precisely what degree of biological continuity or what number of vital functions or metabolic activities is sufficient or insufficient to preserve the life of a living organism. However, it is hard to see what these metaphysically determinate facts in the world might be. If personal identity is reducible to certain more basic biological facts, and these facts hold to various degrees, then it is hard to see what further fact we could hope to discover which could determine the precise degree that is sufficient or insufficient to preserve the life of a living organism. Once again, any proposal specifying the precise degree of biological continuity that is sufficient or the precise number of biological facts that need obtain would seem to be a matter of mere stipulation, a matter of decision, not discovery. Until animalists are able to provide a principled biological criterion by which we can resolve apparent cases of indeterminacy, and which avoids these sorts of concerns, the problem remains.

The second way in which an animalist could respond to the problem of indeterminacy would be to argue that the problem of indeterminacy is, in fact, inevitable, that no plausible view of identity over time evades its grip. van Inwagen, for example, argues that metaphysical vagueness is a "consequence of any interesting Moderate answer to the Special Composition Question."[42] But, as we will see, non-reductionist, further fact theories of personal identity have

[42] van Inwagen, *Material Beings*, p. 282.

the resources to address this issue. And so if the problem of indeterminacy is indeed a problem, as van Inwagen himself appears to admit, then that gives us reason to take seriously those other approaches.

I would like to propose that Thomistic hylomorphism has access to another solution to the problem of indeterminacy not available to the animalist. According to Thomistic hylomorphism, each of us is identical to a particular rational animal, and a rational animal persists by virtue of the continued possession of the same rational soul. While the presence and persistence of the rational soul is indicated by the presence and persistence of the various capacities to which it normally gives rise, including the various vital functions and metabolic activities which comprise biological continuity, it is not reducible to those capacities. And so while biological continuity may admit of degree, it is open to the Thomistic hylomorphist to insist that the continued possession of the same rational soul does not.

In certain scenarios, it may be unclear whether the degree of biological continuity maintained or the number of vital functions and metabolic processes retained are sufficient to preserve the organism's life. And if personal identity consists in, and is thus reducible to, biological continuity, then it will be unclear whether the identity of the person has been preserved. For the Thomistic hylomorphist, however, any indeterminacy here would be merely epistemic. According to Thomistic hylomorphism, even after we have fully specified the exact degree of biological continuity maintained, and the exact number of physical facts that continue to hold, there is still one further fact to be accounted for: whether the person's substantial form, her rational soul, continues to enform her body. And if forms or souls are mereologically simple,[43] then it is impossible for the person's substantial form, her rational soul, to be partially

[43] See Jeremy W. Skrzypek, "Thomas Aquinas and the Complex Simplicity of the Rational Soul", *European Journal of Philosophy*, Vol. 29, No. 4 (Dec., 2021): pp. 900-917 for more on this.

present or partially preserved over time. For the Thomistic hylomorphist, whether the person's substantial form, her rational soul, continues to exist and enform her body would be all or nothing. And thus personal identity would be metaphysically determinate in every case, even if in some cases it might be difficult or even impossible to know whether it in fact holds. And that's one more move than the reductionist animalist can make.

Turning, now to the problem of fission, there are also several ways in which animalists might respond to the cases that I've introduced. First, she could argue that one or more of them is in principle impossible, that one or more of them could never actually occur. Second, she could argue that in any fission case the life of the human organism involved would undergo such significant disruption that that life would necessarily cease, and any life present afterward would be entirely new. Third, she could respond to each case individually. In the case of monozygotic twinning, an animalist could argue, and some do in fact argue, that prior to the point at which twinning is no longer possible, there is no living human organism present and so no human animal would undergo fission during the process of monozygotic twinning.[44] In the case of the brain-body fission, an animalist could argue, and some do in fact argue, that no living human organism can survive without a functioning brain stem, and so the "living" human body left behind is not a living human organism, and so not biologically continuous with the original animal.[45] In the case of whole-brain fission, an animalist could argue that the life of a human organism simply cannot be preserved by half of a brain stem, and so neither recipient would possess the original animal's life. And in the case of amoebic division, an animalist could argue that since ordinary amoebic straightforwardly involves the death of the original amoeba, any

[44] See, for example, Olson, *The Human Animal*, pp. 90-93 and van Inwagen, *Material Beings*, pp. 152-154.
[45] See, once again, van Inwagen, *Material Beings*, pp. 169-181 and Olson, *The Human Animal*, pp. 44-46, 131-135.

form of human reproduction that might resemble it could straightforwardly be interpreted in the same way. So there are several responses available to the animalist here.

But notice that Thomistic hylomorphism can offer another solution to the problem of fission not available to the animalist. According to Thomistic hylomorphism, each of us is identical to a particular rational animal, and a rational animal persists by virtue of the continued possession of the same rational soul. While the presence and persistence of the rational soul is indicated by the presence and persistence of the various capacities to which it normally gives rise, including the various vital functions and metabolic activities which comprise biological continuity, it is not reducible to those capacities. And so while biological continuity can be preserved along more than one path, in any such case there would still be some further fact that could determine which of those paths preserves the original animal's life, namely, which path contains the person's substantial form, her rational soul. Moreover, if forms or souls are mereologically simple, then they cannot be split. And if they cannot be split, then there is at most one path that contains the person's substantial form, her rational soul. It is impossible for part of the person's form to be present along one path and another part of it to be present along another, and it is impossible for all of it to be present along more than one path. Thus, according to Thomistic hylomorphism, there will be a determinate fact of the matter in any fission case as to what has happened to the original human person. Her identity could have been preserved along one path, or the other, or her form could have been destroyed altogether and so the person might have ceased to exist. We might never be in a position to know which of these possibilities was actualized. But in any case there will be a determinate fact of the matter which it was. And that's another move unavailable to the reductionist animalist.[46]

[46] Eberl offers a similar hylomorphic, further fact solution to the problem of fission at pp. 133-134 of his *The Nature of Human Persons,* though he focuses on teletransporter fission cases and the problems that they pose for psychological approaches, whereas I have focused on biological fission cases and the problems that they pose for

V. Conclusion

Animalism (once again, in its "strong" form) is typically understood as a reductionist theory of personal identity over time, inasmuch as it holds that personal identity consists in, and is thus reducible to, certain other more basic facts about biological continuity. I have argued that because of its commitment to a reductionist theory of personal identity, animalism is susceptible to two major concerns faced by other reductionist theories. But could there be a non-reductionist animalism? Is there room for a kind of animalism which maintains that the identity of a human animal over time consists in the continuity of its life but denies that the life of an organism is reducible to any other more basic biological facts, to any of the particular interactions that take place between the parts of that organism at any time? And would shifting to some kind of non-reductionism allow animalism to evade the two major concerns discussed above?

I can think of three ways in which animalism could be fleshed out in non-reductionist terms. First, an animalist could advocate a kind of mereological non-reductionism about lives, according to which the life of an organism is a kind of higher-level, composite event, activity, or process - an event, activity or process composed of, but neither identical to, nor reducible to, the particular interactions that take place between the parts of that organism over time. In such case, the life of an organism might also exert a kind of top-down causal influence on the parts of the organism, conditioning or constraining their behavior in various ways over time. Call this the mereological non-reductionist option.

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animalism. It is sometimes objected that non-reductionist solutions to fission cases simply push the problem back a step. Isn't it still entirely arbitrary which of B or C gets A's rational soul? What sort of explanation could there be as to why A jumps to B rather than C, or vice versa, since B and C are both equally good, or at least sufficiently good, candidates for A? But I think that this objection misunderstands what is being proposed by the non-reductionist. The claim isn't that A's rational soul "jumps" from A to B or C. The claim is that B or C *just is* A. A's rational soul doesn't need to "jump" to B or C. It simply has to remain in the same body in which it has been present all along, while at the same time that body gives rise to another of its kind.

Alternatively, an animalist could advocate a kind of further fact non-reductionism about lives. And I can think of two ways of doing this. First, an animalist could hold that the life of an organism is a kind of emergent event, activity, or process, something which arises from, or is produced by, the particular interactions that take place between the parts of that organism over time but which is nonetheless something altogether distinct from them. Call this the emergentist option. The main difference between the mereological non-reductionist option and the emergentist option is that the mereological non-reductionist option understands the particular interactions that take place between the parts of the organism over time to be parts of the organism's life, whereas on the emergentist option the organism's life is some further thing, some additional event, activity, or process that arises from, or is produced by, those particular interactions but is in no way composed of them.

Finally, an animalist could advocate a kind of further fact non-reductionism about lives by holding that the life of an organism is some kind of deeper, underlying event, activity, or process – an event, activity or process which gives rise to, or causes, the particular biological processes that are apparent to us but which is something altogether distinct from them. In such case, those particular biological processes would be understood as the various ways in which the deeper, underlying event, process, or activity that is the organism's life manifests itself over time. Call this the submergentist option. On both the emergentist and the submergentist options, the life of a living organism is some additional entity, some further thing within the organism beyond the particular interactions that take place between its various parts over time and which constitute the various vital functions and metabolic activities of the organism[47]. The difference between the two proposals is the direction of causality or the order of explanation. On the emergentist option,

[47] In some sense this could also be said of the mereological non-reductionist option. The difference here is that on the latter two options the life of an organism is not only distinct from these interactions and activities, it also neither composes, nor is composed of, them.

the organism's life is something arising from, or produced by, the particular interactions that take place between the various parts of a living organism over time. Conversely, on the submergentist option, the particular interactions that take place between the various parts of a living organism over time arise from, or are produced by, the deeper, underlying event, process, or activity that is the organism's life. On the former, the organism's life persists because of those particular interactions; on the latter, those particular interactions occur because the organism's life persists.

Now, much more would need to be said about each of these proposals in order to determine how well they fare or whether they would be abandoning too many of the core commitments of animalism to be considered genuine variants of that approach. But if an animalist were to reconceptualize the notion of a life in any of these three ways, would it even allow animalism to evade the two major concerns for reductionist theories of personal identity discussed above? Right off the bat, it is not clear to me that the mereological non-reductionist option does allow animalists to successfully avoid the problems of indeterminacy and fission. For as long as the life of an organism is composed of various smaller processes or interactions, then it is possible to imagine cases in which that life is preserved only to a certain degree (inasmuch as fewer of those smaller processes or interactions remain) or preserved twice over (by taking half of those smaller processes or interactions and setting them off in one direction and taking the other half and setting it off in another). What the non-reductionist animalist needs is for lives to be mereologically simple, incapable of admitting of more or less, and incapable of being split or divided or duplicated. And only on the second two options is this a possibility.

If an animalist were to reconceptualize the notion of a life in either of these last two ways, then it may be open to her to deny that personal identity consists in, and is thus reducible to, mere biological continuity. It is open to the non-reductionist, further fact animalist to insist

that while the identity of a human animal over time consists in the continuity of its life, the identity of the animal's life is some further fact beyond, beneath, or over and above the particular interactions that take place between the parts of that organism, the particular biological processes in which the various parts of that organism are engaged. It could still be true that the continuity of those interactions and processes are the best evidence we have for thinking that the same life remains, but, crucially, the continuity of that life would not consist in them. And if the identity of a human animal is grounded not merely in biological continuity but in the presence of some further fact, then this makes available similar further fact solutions to the two main problems for reductionist animalism articulated above. The non-reductionist animalist could insist that while biological continuity may admit of degree, the identity of an organism's life does not. And while biological continuity can be preserved along more than one path, in any such case there would still be some unique, further fact concerning which path preserved the original organism's life.

There are, then, several ways of fleshing out a non-reductionist variant of animalism which might help it to avoid the two main concerns for reductionist animalism articulated above. But notice that in fleshing out animalism in this way, the view would thereby come very close to a kind of hylomorphism, perhaps even to the sort that Aquinas himself had in mind. For it would then hold that each of us is identical to a particular human animal, that the one and only thinker of my thoughts is that animal, and that, in most circumstances, our identity over time can be tracked by following biological continuity, but also that every animal possesses a further part or aspect, its life, which also serves as the metaphysical ground for that animal's identity over time. Indeed, when spelling out what exactly a life is, it is not uncommon for animalists to speak in strikingly hylomorphic ways. Here are some examples:

> Living organisms have a dynamic stability: they retain their characteristic *form* and structure despite a constant and rapid exchange of matter and energy with their surroundings.[48]
>
> A life is a sort of storm of particles in constant motion. Storms too are events: they are extended in time, begin and end, have earlier and later parts.) A life draws in new particles and energy from its surroundings, imposes its characteristic *form* of activity on those particles, and later expels them. But unlike meteorological storms, lives are self-directing, or self-organizing. Their activities are constrained by elaborate internal controls. One result of this is that a life retains its *form* and structure for a remarkably long time, compared with the rate at which matter flows through it.[49]
>
> The nature of the physical universe is such that the mere existence of a living organism, the mere fact that it is distinguishable from its environment, means that it is in a state of jeopardy. By the middle of the nineteenth century physicists were forced to acknowledge that the physical universe tends towards a state of uniform disorder, a leveling down of all observable differences, and that left to themselves things will cool, fall, slow down, crumble and disperse. In such a world the survival of *form* depends on one of two principles: the intrinsic stability of the materials from which the object is made, or the energetic replenishment and reorganisation of the material which is constantly flowing through it. The substances from which a marble statue is made are stably bonded together, so that the object retains not only its shape but its original material. The configuration of a fountain, on the other hand, is intrinsically unstable, and it can retain its shape only by endlessly renewing the material which constitutes it; that is, by organising and imposing structure on the unremitting flow of its own substance. Statues preserve their shapes; fountains perform and re-perform theirs. The persistence of a living organism is an achievement of the same order as that of a fountain. The material from which such an object is made is constitutionally unstable; it can maintain its configuration only by flowing through a system which is capable of reorganising and renewing the configuration from one moment to the next. But the engine which keeps a fountain aloft exists independently of the watery form for which it is responsible, whereas the engine which supports and maintains the *form* of a living organism is an inherent part of its characteristic structure.[50]
>
> Animalism assumes that the biological functioning of the human organism – that is, the persistence of the unity and interaction of metabolic processes – is essential for human beings to persist. Accordingly, a person's identity is no different from the identity of other living things like horses or mosquitos. Her persistence does not consist in the preservation of the same matter but rather in the preservation of

[48] Olson, *The Human Animal*, p. 127, emphasis added.
[49] *Ibid*., pp. 136-137, emphasis added.
[50] Jonathan Miller, *The Body in Question* (New York: Random House, 1978): pp. 140-141, emphasis added, quoted in van Inwagen, as an illustration of the sort of view that he has in mind, at pp. 92-93 of *Material Beings*.

> the same organizational biological *form*, since the matter constituting the organism is continually replaced.[51]

Even van Inwagen himself acknowledges the proximity of his own view to the hylomorphism of Aristotle:

> In explaining what a life is, and having done so, in saying that the things called 'organisms' or 'living things' in everyday life are things that are composed of objects whose activities constitute lives in the sense explained, I have presented a certain picture, rather an abstract one, of the nature of a living organism. This picture is a philosophical picture (*stripped of its atomism, it would be Aristotle's picture*)[52]

But just how similar would non-reductionist animalism and Thomistic hylomorphism be? On the sort of non-reductionist animalism that I have described, the further part or aspect which serves as the metaphysical ground for that animal's identity over time, its life, is a kind of event, process, or activity. And hylomorphists, let alone Thomistic hylomorphists, do not typically refer to the form or soul of a living organism as any kind of event, activity, or process. However, there are in fact several contemporary hylomorphists, inspired by Aristotle and St. Thomas, who have recently argued for an understanding of form along these lines.[53] And so if animalists opt for non-reductionism with respect to lives, and if hylomorphists opt for an understanding of the forms of living things as events, activities, or processes, then animalism and hylomorphism turn out to be very similar indeed. Which leaves us with the dilemma for animalists with which I

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[51] Gasser and Stefan, "Introduction", p. 4, emphasis added.
[52] van Inwagen, *Material Beings*, p. 92, emphasis added.
[53] See, for example, William Jaworski, *Structure and the Metaphysics of Mind: How Hylomorphism Solves the Mind-Body Problem* (Oxford: Oxford University Press, 2016): pp. 14-15; William Jaworski, "Hylomorphism: Emergent Properties without Emergentism," in Miguel Garcia-Valdecasas and Nathaniel Barrett (eds.), *Biology and Subjectivity: Philosophical Contributions to Non-Reductive Neuroscience* (Basel: Springer, 2016): pp. 48-49; Anna Marmodoro, "Aristotle's Hylomorphism without Reconditioning", *Philosophical Inquiry*, Vol. 36, No. 1-2 (Winter-Spring, 2013): p. 17; Anna Marmodoro and Christopher J. Austin, "Structural Powers and the Homeodynamic Unity of Organisms", in William M. R. Simpson, Robert C. Koons, and Nicholas J. Teh (eds.), *Neo-Aristotelian Perspectives on Contemporary Science* (New York: Routledge, 2017): p. 171; Robert C. Koons, "Stalwart vs. Faint-Hearted Hylomorphism: Toward an Aristotelian Account of Composition", *Res Philosophica*, Vol. 91, No. 2 (Apr., 2014): p. 159; Christopher J. Austin, "A Biologically Informed Hylomorphism", in William M. R. Simpson, Robert C. Koons, and Nicholas J. Teh (eds.), *Neo-Aristotelian Perspectives on Contemporary Science* (New York: Routledge, 2017): pp. 185-209; Jeremy W. Skrzypek, "From Potency to Act: Hyloenergeism", *Synthese*, Vol. 198, No. 11 (Jun., 2021): pp. 2691-2716.

began the paper: confronted with the problems of indeterminacy and fission, animalists must either forego reductionism and reconceptualize the continuity of a human organism's life in non-reductionist terms, in which case animalism turns out to be not very different at all from a kind of hylomorphism, or they can continue to conceptualize the continuity of a human organism's life in reductionist terms, in which case Thomistic hylomorphism has the advantage over animalism in that it avoids two major concerns faced by its closest competitor.

With that said, it may be that there are other difficulties for Thomistic hylomorphism not faced by animalism, problems that stem from its commitment to the existence of some further fact beyond biological and psychological continuity which determines our identity over time. It should be emphasized that Thomistic hylomorphism is a theory with some extraordinary commitments. It posits the existence of an immaterial, indivisible, and undetectable element within every human person. It is committed to the unicity of substantial form, and thus the inability of any material part of the human person to survive separation from the whole. And it introduces the complex apparatus of a hylomorphic theory of nature to explain the relationship between body and soul. On the other hand, if, as several of the authors cited above have argued, these concerns can indeed be successfully addressed, and these extraordinary commitments can indeed be sufficiently motivated, then Thomistic hylomorphism may serve as a plausible alternative for the animalist wishing to capture the most important insights of that sort of view.[54]

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