

AQUINAS ON SUBSTANCE:
A DEFENSE OF HYLEMORPHISM AGAINST CONTEMPORARY ACCOUNTS OF
SUBSTANCE

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ABSTRACT

Theories of substance have dominated much of the literature in metaphysics. Today, there are two prominent accounts of substance: bare particularism and bundle theory. Both theories are attractive for different reasons, yet both have serious problems. While bare particularism and bundle theory enjoy preference in the literature on substance, I think that hylemorphism and the metaphysics of substance formulated by Aristotle and adopted by Saint Thomas Aquinas is an attractive view for two reasons: (1) its ability to account for both substantial and accidental change, and (2) its ability to account for the teleological nature of substance. To account for substantial change, hylemorphism makes a distinction between different types of form and matter. In substantial change, the substantial form of a substance is destroyed and replaced with a new substantial form. The subject of this change is *prime matter*. In accidental change, an accidental form is replaced by a new accidental form and the subject of this change is *secondary matter*, or the substance itself. Furthermore, a substance can also be understood as a composite of essence and accidents. By postulating an essence distinct from its accidents, hylemorphism can explain how substances are internally unified and directed towards a range of characteristic ends. As an integral part of a more general metaphysics, hylemorphism provides motivation to revisit the metaphysics of Aristotle and Aquinas.

DEDICATION

I dedicate this thesis to my daughter, Sophia, and to my wife, Rachel.

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CHAPTER I

INTRODUCTION

Theories of substance have enjoyed much attention throughout the history of philosophy. The notion of substance has its roots in Plato and Aristotle, but even today novel accounts of substance can be found. The concept of substance has so many historical connotations that many contemporary thinkers opt to use “object” or “thing” when discussing an ontologically independent entity. This leads to confusion when interacting with ancient and medieval texts. Aristotle and Aquinas (A-T hereafter) have a specific notion of substance that does not neatly map onto contemporary terminology. Therefore, I think it best to adopt the traditional terminology when discussing historical accounts of substance.

In this thesis I will defend the traditional hylemorphism of A-T against contemporary accounts of substance. While there are many games in town, so to speak, bare particularism and bundle theory are the most prominent contemporary accounts of substance. Furthermore, each of these views has a variety of defenders who often disagree with one another. For this reason, I will primarily focus on the work of two philosophers for each theory. Concerning bare particularism, I will use J. P. Moreland and Timothy Pickavance with help from the catechismal work of Nathan Wildman. For bundle theory, I will focus on Peter Simons’ nuclear bundle theory (NT) and Markku Keinanen’s strong nuclear theory (SNT).

After explicating the major themes of these two contemporary theories, I will then explain the theory of hylemorphism. This theory originates in Aristotle, but I will use its medieval defender, St. Thomas Aquinas, to lay out its central features. While this theory is over 2,000 years old, it still has ardent defenders in contemporary metaphysics. I will briefly look at the works of David Oderberg, Edward Feser, and Anna Marmodoro to show the viability and traction of this theory today.

Finally, I will show why hylemorphism is the most attractive theory of substance. To do this, I will argue that substantial change and the teleological nature of substance are critical *explananda* in the realm of metaphysics, and, that traditional hylemorphism gives us the best explanation for these phenomena. Furthermore, as hylemorphism is but one part of A-T metaphysics, motivation for this theory of substance also provides a good reason to take the metaphysics of A-T more seriously.

CHAPTER II

CONTEMPORARY ACCOUNTS OF SUBSTANCE

Theories of substance have a rich history, easily dating back to ancient Greece. Today, there are remnants of traditional accounts of substance along with many new views. In this thesis, I defend traditional hylemorphism, which is the substance theory of Aristotle and St. Thomas Aquinas. While this view is perhaps the oldest and among the most robust (in terms of breadth of the overall worldview), hylemorphism is very much a peripheral account of substance in today's literature. In this section, I will look at two of the major theories of substance: bare particularism and bundle theory. Both of these views attempt to trace their heritage back to ancient Greece, but virtually all of the work being done is explicitly novel, rather than exegetical. I will focus on the work of J. P. Moreland and Timothy Pickavance to lay out bare particularism. For bundle theory, I will primarily use Peter Simons and Markku Keinänen.

BARE PARTICULARISM

Bare particularism, like most theories, has a general structure with several branches building off the main thesis. Some theories utilize traditional terms like "substratum" while others designate novel expressions like "thick" and "thin" particulars. Some theories are nominalist, but most opt for realism. In discussing bare

particularism, I will focus on the recent writings of J. P. Moreland and Timothy Pickavance to highlight two important “roles” of the bare particular, individuation and exemplification. With the help of recent work by Nathan Wildman, I will begin this section with some introductory remarks on bare particulars.

In an explicitly “catechismal” paper,¹ Nathan Wildman surveys the bare particularist position. He begins with the usual story: constituent substance ontologies require an internal, ontological structure within any substance. “When it comes to such ontologies”, Wildman says, “there are two major games in town”: bundle theory and bare particularism.² He notes that bare particularists are often motivated to reject bundle theory with a reference to Max Black’s famous scenario.³ Bare particularism avoids the quandary by postulating that the two spheres have different bare particulars, and are therefore numerically distinct. Wildman notes that another major motivation for bare particularism over bundle theory is the problems with substance unity:

Bundle theory says that Tomato just is the bundle of redness, roundness, and tomatohood. But what ties these properties together in any meaningful way—what *bundles* the properties, rather than leaving them a loose collection or a set? The underlying thought here is that there ought to be something that explains or grounds why these properties come together in this substance.⁴

¹ Nathan Wildman, “Load Bare-ing Particulars,” *Philosophical Studies* 172, no. 6 (2015): 1419-34.

² *Ibid.*, 1419-20.

³ Max Black, “The Identity of Indiscernibles”, *Mind*, no. 242 (1952): 153-64.

⁴ Wildman, “Load Bare-Ing Particulars,” 1420.

Having briefly established some motivation for bare particularism, Wildman then lays out some particular commitments of this theory.

First, bare particularism is committed to “constitution: every substance has (at least) two kinds of proper constituents, its properties and its bare particular”.⁵ Wildman thinks that this commitment is universally had by bare particularists, but that beyond “constitution”, there is a divergence in views among bare particularists. This divergence begins with answering the question of “identity: Is a substance identical to its bare particular?”.⁶ Wildman states that a positive answer entails “One-thingism” and the negative, “Two-thingism”. The names of these two camps is creatively revealing—the “one-thingist” thinks that substance and the bare particular are one and the same; the “two-thingist” thinks the substance and the bare particular are, surprisingly, two things, albeit intimately related. Wildman then shows that if we are to be bare particularists, we should adopt “two-thingism” as the other alternative either violates “constitution” or threatens to collapse into bundle theory.⁷

“Two-thingism” raises an important question with regards to properties: what *has* the properties, the bare particular or the substance? If we answer that the bare particular does not have properties, we run into the classic objection against bare particularism: everything must have some properties. Noting this, Wildman says the bare particularist ought to say that both the substance and the bare particular *have* properties: “without the

⁵ Ibid., 1420.

⁶ Ibid., 1422.

⁷ Ibid., 1422.

pin-cushion that is Tom [the bare particular of the substance Tomato], there'd be nothing for Tomato's property-pins to stick together in".⁸ However, this raises an arguably more important question: does the substance *have* properties the same way a bare particular does?

Wildman notes that the bare particularist can then choose between "one-relationism" and "two-relationism". For the one-relationist, "there is one and only one instantiation relation, such that the *having* linking Tom [bare particular] to being a tomato is the very same *having* as the one connecting Tomato [substance] to the property".⁹ Accordingly, the "two-relationist" posits two such relations, and a further set of distinctions is needed. Wildman calls the substance-to-property relation *possessing*, and the bare-particular-to-property relation *bearing*. With these distinctions made clear, Wildman asks two questions: (1) does a bare particular *possess* properties, and (2) does a bare particular *bear* properties? The "two-relationist" ought to say that bare particulars *bear* properties but they do not *possess* them—they are, after all, "bare" for a reason! Wildman argues:

This still ensures that even bare particulars like Tom 'have' properties (in *some* sense of 'have'), which not only blocks any potential revival of the Classic Objection [everything has properties] but also makes clear that Tomato's and Tom's havings are markedly different beasts".¹⁰

However, this, once again, requires the bare particularist to clarify his position.

⁸ Ibid., 1424.

⁹ Ibid.

¹⁰ Ibid., 1425.

Wildman says that this nuanced understanding of “having” moves one to accept the following tenet: “Possessing: every substance possesses its properties by having as constituents properties that are borne by another of its constituents”.¹¹ This possession refers to a substance [Tomato] that “has” its properties *by possessing*, as a proper constituent, Tom [bare particular of substance Tomato], which actually *bears* the properties. This move is motivated by a desire to avoid the classic objection, and by the need to carefully unpack “having”.

To recap: Wildman argues that if one is to opt for bare particularism, they ought to commit to the following conjunction: “constitution”, “two-thingism”, “two-relationism”, and “possessing”. But even this nuanced view still has some glaring concerns.¹² Wildman thinks that one who is willing to take the steps outlined above might be better off reconsidering another theory of substance. While his paper does already show the moves a bare particularist makes, I think that a discussion of J. P. Moreland and Timothy Pickavance will lead to a greater appreciation of where bare particularism is situated in the contemporary debate on substance.

¹¹ Ibid.

¹² Ibid., 1432.

Bare Particularism and Individuation

In his recent paper, “Bare Particulars and Exemplification”,¹³ Timothy Pickavance begins with a brief discussion of two fundamental questions for the bare particularist: first, what do bare particulars do, and second, what must bare particulars be like in order to do these things? The answer to question one, simply put according to Pickavance, is that bare particulars individuate and exemplify.¹⁴ While the answer can be simply put, the argument in defense of bare particulars being able to individuate and exemplify is rather complicated and likewise contentious—more on this later. To the second question, what must bare particulars be like in order to individuate and exemplify, Pickavance replies that “they [i.e. bare particulars] must be (i) non-shareable, (ii) constituent-less, (iii) property-bearing, (iv) constituents of substances”.¹⁵ He argues that bare particulars must be (i), (ii), and (iv) in order to individuate and they must be (iii) to exemplify. I think that these two questions are very helpful starting point for a discussion of the bare particularist theory in general, so I will begin with individuation.

¹³ Timothy Pickavance, “Bare Particulars and Exemplification,” *American Philosophical Quarterly* 51, no. 2 (2014): 95-108.

¹⁴ *Ibid.*, 95.

¹⁵ *Ibid.*, 96.

In a seminal paper, “Theories of Individuation: A Reconsideration of Bare Particulars”,¹⁶ J. P. Moreland quotes Gustav Bergmann’s classical definition of bare particulars:

Bare particulars neither are nor have natures. Any two of them are not intrinsically but only numerically different. That is their bareness. It is impossible for a bare particular to be ‘in’ more than one ordinary thing...A bare particular is a mere individuator...It does nothing else.¹⁷

Moreland says that this definition implies three propositions concerning bare particulars. First, he thinks that a bare particular is not a property or relation, but “a numerically primitive individual of logical type zero in Russell’s sense”.¹⁸ Second, he emphasizes that bare particulars do not have natures or properties at all. And third, that the bare particular’s only job is individuation. Moreland thinks that the first proposition is rather clear; the second is ambiguous but will be made clear once we come to understanding the way bare particulars “have” properties; and the third proposition needs qualification.

Moreland thinks the claim that bare particulars are solely individuators needs more attention—and he is correct as we shall see that Pickavance seems to question this.¹⁹ Moreland qualifies his proposition by saying that:

Bare particulars have been called upon to serve a number of metaphysical roles in addition to individuation: the unifier and possessor of all a primary substance’s properties (e.g., Locke’s view of substance), the ground for the concreteness of

¹⁶ J. P. Moreland, “Theories of Individuation: A Reconsideration of Bare Particulars,” *Pacific Philosophical Quarterly* 79, no. (1998): 251-63.

¹⁷ *Ibid.*, 253-4.

¹⁸ *Ibid.*, 254.

¹⁹ Pickavance, “Bare Particulars and Exemplification,” 105.

an ordinary thing if properties are taken as abstract entities, that which accounts for the endurance of a substance through intrinsic qualitative change. In this article, I follow Bergmann and I am only discussing bare particulars as individuators. In fact, I do not think that they serve any of those other roles just mentioned, except perhaps concretization.²⁰

Moreland is clear that bare particulars should only be called upon to individuate, but the question then becomes what else, if not the bare particular, can account for unity, concreteness, and endurance through change?

In order to defend bare particulars as individuals, Moreland addresses some common objections to this tenet. The first string of complaints against bare particularism falls loosely under a “coherence” problem:

- (1) It is a necessary truth that any entity exemplifies properties yet bare particulars exemplify no properties.
- (2) Bare particulars are supposed to have no properties, certainly no properties necessarily, yet there are many properties they have and have necessarily: being concrete, being particular, transcendental properties like colored if green, being the constituent of at most one entity, having the properties of lacking properties.
- (3) One cannot grasp or apprehend or conceive something that doesn't exemplify properties so bare particulars fail in this respect.²¹

Moreland thinks that some of these coherence objections are suspect, and the rest based on a misinterpretation of the bare particularist position. “Lacking a property”, or a negative property, cannot be a property; it is simply a brute fact that a substance lacks some property. To address the misunderstanding of the position, Moreland speaks of

²⁰ Moreland, “Theories of Individuation,” 254.

²¹ Ibid., 256.

“two different senses of being bare along with two different ways something can have a property”.²²

To illustrate these differences, Moreland compares the bare particular to an Aristotelian substance. According to Moreland, the Aristotelian substance Fido, a dog, has a property, being brown. Fido, as a substance, is “constituted”²³ by an essence that contains internal capacities, or potentialities. Fido’s capacities are relative to the nature, or substantial form, of Fido, dogness. These potentialities ground the properties that Fido, in fact, exemplifies. Moreland continues: “when a substance has a property, that property is ‘seated within’ and, thus, an expression of the ‘inner nature’ of the substance itself”.²⁴ Therefore, properties are seated, or rooted, within a substance. In contrast, bare particulars are “simple and properties are linked or tied to them”.²⁵ For Moreland, the different senses of “having” (as discussed in the Wildman paper) are key. Properties are rooted in substance, and likewise a substance *possesses* a property. Properties are linked or tied to bare particulars, and likewise bare particulars *bear* properties.

Moreland then addresses D. M. Armstrong’s rejection of bare particularism, which is based on states of affairs being unanalyzable and irreducible. For Armstrong, the world is full of states of affairs, or “a’s being F”: “a” is a thin particular, “F” is a property, and the conjunction “a’s being F” is a thick particular, or state of affairs.

²² Ibid., 257.

²³ Ibid.

²⁴ Ibid.

²⁵ Ibid.

Armstrong thought that we needed a thin particular to individuate much like a Lockean substratum, but the thick particular is not reducible to its constituents. However, Moreland thinks that Armstrong's theory amounts to a bare particularist theory of substance. Moreland opts for a careful interpretation of "having" a property and he makes a distinction between a substance *having* a property and a bare particular *having* a property (as Wildman noted above).

The last of the incoherence objections that Moreland answers is the conceivability of a bare particular as something that does not exemplify properties. Moreland first says that we must distinguish between sense apprehension and acquaintance from conceptual grasping. He thinks that it is true we cannot sensibly apprehend the bare particular, but he can "easily"²⁶ conceive of the bare particular in itself, stripped of properties, just as an individuator. Interestingly, Moreland makes a bolder claim: "even if we grant that such conceivings are impossible, it only follows that we can conceive of bare particulars only by grasping them through their properties".²⁷ More on this claim later, but it seems very similar to the way hylemorphists defend the existence of prime matter.

The final objection that Moreland addresses relates to the fact that bare particulars always exist with properties, some necessary. It is clear why bare particulars are tied to properties, since they are constituents of substances that possess various

²⁶ Ibid., 259.

²⁷ Ibid.

properties—but can a bare particular “splinter off on [its] own”?²⁸ Moreland thinks that there is no good answer to this question; he thinks that bare particulars are independent entities since they are simples. He also replies that he is committed to a general theory of existence that does not allow “existence” to be a property *simpliciter*.

Moreland’s bare particularist individuation is committed to the independent existence of bare particulars, which, in his opinion, are easily conceived of stripped of properties. Also, he thinks that Aristotle’s ontology may not be so different from contemporary bare particularism (prime matter as the *substratum*). While Moreland’s work on this theory is foundational, Timothy Pickavance has written extensively on bare particularism as well, and he seems to align himself with J. P. Moreland.

Bare Particularism and Exemplification

Pickavance’s paper, “Bare Particulars and Exemplification”, divides the duties of the bare particular into individuation and exemplification. Moreland wrote on individuation; now, Pickavance makes the case for bare particular exemplification. Both of these papers have much common ground, but I think that a detailed look at each paper is required for a better understanding of the bare particularist position.

Following Moreland’s ontology, Pickavance begins with a reiteration of the two senses of “having” a property. For Moreland and Pickavance, the bare particular, $b(t)$, of

²⁸ Ibid., 260.

substance *t* exemplifies the property of, for example, being a tomato. However, this exemplification is not like a substance having its properties, a constituent-whole exemplification, but rather a “strict, philosophical” exemplification.²⁹ Just as Moreland used hylemorphism to illustrate the different sense of “having” in his ontology, Pickavance too uses Aristotle to show how his two “lessons” are indeed old.³⁰

According to Pickavance, bare particulars are like prime matter and essential properties are similar to substantial forms. Just as Aristotle distinguished between the way prime matter exemplifies substantial form from the way a substance exemplifies substantial form, Pickavance thinks any constituent ontology with a substratum requires two types of exemplification relations. He says:

The right way to accommodate this fact is to plump for two types of exemplification. The standard way to do this, dating all the way back to Aristotle (long before the Incoherence Argument showed up), has it that substrates exemplify essences in a non-constitution way, while substances exemplify essences by being partially constituted by them. I’ve simply labeled these two types of exemplification “SP-exemplification” and CW-exemplification”, respectively.³¹

Pickavance and Moreland both believe that their two types of exemplification relations are rooted in traditional hylemorphism.

The next important step in making the case for bare particular exemplification is to discuss accidental predication. Pickavance sees two alternatives for the bare particularist. First, the substance CW-exemplifies (constituent-whole) the accidental

²⁹ Pickavance, “Bare Particulars and Exemplification,” 97.

³⁰ Ibid., 98.

³¹ Ibid.

property and the bare particular of the substance SP-exemplifies (strict, philosophical) the accidental property. Or, second, and resembling Aristotle, the substance SP-exemplifies the accidental property and together the substance and accidental property form a “coincidental”, which, in turn, itself (i.e. the coincidental) CW-exemplifies their constituting substance’s accidental properties.³² Pickavance draws out two important questions for these two theories of accidental predication.

On the first view of accidental predication, the “boundary” of the substance includes the bare particular and both the accidental and essential properties. However, when we think of change this raises an interesting question: how do we differentiate between essential and accidental properties? On the one hand, it seems that the substance needs its constituents to be identified across time, but we also acknowledge that change occurs all the time—so what is the bare particularist to say? Pickavance says that one must point to the special nature of the properties themselves. However, we cannot simply categorize properties as either essential or accidental, as the existence of only one property that is accidental in one substance and essential in another will force the bare particularist to look elsewhere to make sense of the different roles of essential and accidental properties.³³

On the “coincidental” view of accidental predication, Pickavance thinks that the question becomes how “a substance’s accidental properties can be constituents of *it*”.³⁴

³² Ibid., 99.

³³ Ibid., 103.

³⁴ Ibid., 104.

Remember, on this “coincidental” view, the substance together with the accidental property forms a coincidental, which has, as a constituent, the substance. Pickavance breaks down the question into two puzzles:

There are two parts of this puzzlement. First, what is the whole, if there is one, whose constituents include all of $b(t)$ and t 's essential and accidental properties...[second] and maybe more importantly, what is the complex whole, if there is one, composed of $b(t)$ tied to the accidental property of *being juicy*?³⁵

On this complicated view of accidental predication, the accidental properties seem to become independent substances—a bare particular “tied” to a property. This results in all change being substantial, which is a hard position to defend.

Pickavance ends his paper with some motivation for further work with bare particulars. He thinks that the questions of accidental predication and change raise important questions for bare particularism. In contrast to Moreland's sentiment that bare particulars ought only to be used for individuation, Pickavance thinks that bare particularism should follow Aristotle by implicating substrates in accounts of change, unification, and other phenomena—but why not simply adopt Aristotelian hylemorphism?

³⁵ Ibid.

BUNDLE THEORY

The other major player in the contemporary accounts of substance game is bundle theory. I will first survey some of the literature on bundle theory before focused on two “sophisticated” versions of bundle theory: Peter Simons’ Nuclear Theory of substance and Markku Keinanen’s Strong Nuclear Theory of substance. But first, I will look at some of the other, classic versions of bundle theory laid out of James van Cleve and Albert Casullo.

In his paper, “Three Versions of Bundle Theory”,³⁶ James van Cleve discusses two classic versions of bundle theory in addition to his own formulation. He finds fault with the first two and he thinks his own version has a hefty price tag, hinting at a conversion back to Aristotelian substance.³⁷ The first bundle theory van Cleve discusses is a crude version targeted by six objections. He defines this formulation as follows:

It could be said that a thing is a *set* of which properties are its members, or that it is a *whole* of which properties are its parts. Perhaps there are other possibilities, too, but the idea in any case would be (i) that a thing is a complex entity of which properties are the sole constituents, and (ii) that for a thing to have or exemplify a property is for that property to be a constituent of it.³⁸

³⁶ James van Cleve, “Three Versions of Bundle Theory,” *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* 47, no. 1 (1985): 95-107.

³⁷ *Ibid.*, 105.

³⁸ *Ibid.*, 95.

The first three objections van Cleve levels against bundle theory are sufficient grounds to reformulate bundle theory as to become a more viable theory of substance. First, if a thing is nothing but a collection of properties, then any collection of properties would be a thing and every possible set of properties would, in fact, be a thing. This is simply absurd. Second, it seems that a thing, as a set of properties, would be an eternal, necessary thing. And third, that “exemplification cannot be analyzed simply as the converse of membership. Redness is a member of {redness, roundness}, but it would be absurd—a category mistake—to say that that set is red”.³⁹ The other three objections are applicable to the second version of bundle theory, so I will discuss them there.

The second bundle theory van Cleve puts forward says that a thing is not *simply* a bundle of properties, but rather a bundle where the properties stand in relation to one another in a certain way. This relation is sometimes referred to as “co-instantiation”, or “compresence”, or “consubstantiation”. This relation is commonly explained as a relation that “relates a number of properties just in case they are all properties of one and the same individual”.⁴⁰ As van Cleve notes, the most important feature of this view is that “co-instantiation” is a *contingent* relation, meaning that two or more properties that stand in relation to one another do so contingently, not necessarily. This more nuanced version of bundle theory avoids the three objections discussed above, but van Cleve thinks the final three objections still deserve close attention.

³⁹ Ibid., 96.

⁴⁰ Ibid., 97.

This first objection (fourth overall) states that a thing, if understood as a bundle of properties, cannot change as a set cannot change its members. Van Cleve thinks that the process of change is still a problem for this second version of bundle theory. On this view, the relations can change between properties, but this is not the same as saying an individual is changing; with change, a new set of properties “super-cedes” the old and a new individual replaces the old. It seems, therefore, that this view cannot account for change of an individual over time, or accidental change.

The next objection deals with accidental predication, which, as you might recall, was a bit concern for bare particularism. If a thing is a bundle of properties, then it has its members essentially, meaning that it could not have had any other properties than it does. For the full force of this objection, consider that a thing might not have existed if the properties constituting it never were co-instantiated, but, we cannot say that an individual thing might have had other properties than it does since it has been established that a new collection of co-instantiated properties is a new individual. So for a thing to have properties other than what constitutes it now would for it to be a *wholly* different thing. Van Cleve suggests that by postulating an inner core bundle we might be able to avoid this objection—but more on this with Simons and Keinanen.

The final objection that van Cleve raises for our second version of bundle theory is that this bundle theory implies “a dubious version of PII [the Principle of the Identity of Indiscernibles]”.⁴¹ He thinks that a defender of bundle theory might (and probably

⁴¹ Ibid., 101.

does) opt for tropes, rather than universals, as properties. But van Cleve does not agree with tropes as properties as they “belong to the category of *particulars* rather than to the category of properties. A particular redness seems really to be a special kind of red particular”.⁴²

In order to avoid all six objections, van Cleve formulates a third version of bundle theory which he says is of his own creation. He likens this version to a “new phenomenalism” in which we “decline to *identify* individuals with complexes of properties, offering instead to *translate* any statement ostensibly about individuals into a statement exclusively about properties”.⁴³ The upshot of this view is that we are unable to talk about individuals since the only logical subjects in this ontology are properties of the Platonic variety. Van Cleve concludes by acknowledging that this version of bundle theory, while tenable, is highly unattractive, as the result is a world without *things*.

In a later paper, Albert Casullo responds to van Cleve’s objections against bundle theory and, in the process, introduces a novel version of bundle theory immune to the “dubious version of PII” objection. As van Cleve also noted, bundle theory can be taken to mean many things; Casullo defines the view as being committed to “(1): A thing is a complex of properties which all stand in some contingent relation, call it *co-instantiation*, to one another”.⁴⁴ Casullo summarizes van Cleve’s first two objections,

⁴² Ibid.

⁴³ Ibid., 103.

⁴⁴ Albert Casullo, “A Fourth Version of Bundle Theory,” *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* 54, no. 1 (1988): 125-139.

(01) the problem of change and (02) accidental predication, and states that these objections raise two problems for the bundle theorist: (a) individuation, and (b) identity across time. Furthermore, individuation requires one to understand the relation between a thing and its properties, which, in turn, requires further explanation of two facts: (i) that things have properties in common with other things, and (ii) that each thing is distinct/different from each other thing. According to Casullo, bundle theorists take properties to be universals, so (i) is not a concern as universals are capable of multiple instantiation. But (ii) is a concern as it would seem that complexes of properties (i.e. *things*) are also multiply instantiable. Therefore, the bundle theorist must look beyond properties for an answer to the problem of change.

In order to account for identity across time, the bundle theorist needs to postulate an enduring, unchanging entity that Casullo calls a *continuant*. Now, since (a) and (b) are distinct problems, Casullo thinks that the bundle theorist can give different solutions to each. Following Bergmann, Casullo thinks that the bundle theorist can solve the question of identity over time by adopting (2): an *enduring* thing is a series of momentary things all of which stand in some contingent relation *R*.⁴⁵ For this to work, a bare particular must serve as an *individuator* of momentary cross sections of time. There are no continuants; a “thing” endures across time via individual temporal cross sections that stand in relation to one another. Casullo says that (2) is universally accepted by major proponents of bundle theory. However, the bundle theorist cannot stop at (2), as

⁴⁵ Ibid., 127.

this is only a solution to identity across time, not individuation at a momentary cross section. Therefore, the bundle theorist ought to reformulate (1) into “(1*): a *momentary* thing is a complex of properties which all stand in the relation of *co-instantiation* to one another”.⁴⁶ Casullo thinks that van Cleve and others misconstrue the bundle theorist’s position and by accepting both (1*) and (2), one can give two solutions to two separate problems: individuation and identity across time.

Having clarified the bundle theorist’s general position, Casullo now develops two new versions of bundle theory: strong bundle theory (SBT) and weak bundle theory (WBT). SBT states that “a momentary physical thing is *necessarily* identical to a complex of mutually co-instantiated properties”.⁴⁷ In contrast, WBT goes for the softer claim, “*contingently* identical” rather than necessarily identical. Casullo thinks that WBT has an advantage over SBT because it is not committed to the necessary truth of the Principle of the Identity of Indiscernibles. Casullo thinks that both SBT and WBT are immune to van Cleve’s third objection (concerning PII) and therefore bundle theory can be a fashionable position.

⁴⁶ Ibid., 128.

⁴⁷ Ibid., 131.

Nuclear Theory

In his classic paper, “Particulars in Particular Clothing: Three Trope Theories of Substance”, Peter Simons surveys the ontological landscape and finds that both substratum and bundle theories have their share of problems. Instead, he formulates his famous nuclear theory, which he claims is neither a bundle or substratum theory. According to Simons’ nuclear theory, every object consists of an inner, nuclear bundle and its outer, accidental tropes. The nuclear bundle is in the “style”⁴⁸ of Husserl, who used a special “foundation relation” to avoid regress. Simons thinks that this theory avoids common objections to both bundle theories and substratum theories.

To differentiate nuclear theory from other bundle substance theories, Simons takes a two-stage approach.

In the first stage, we have a collection of tropes which must all co-occur as individuals. These form an essential kernel or *nucleus* of the substance...[such] a nucleus forms the *individual essence* or *individual nature* of a substance, but will usually not be a complete substance, since there are further, non-essential properties that the substance has. The nucleus will require supplementation by tropes of certain determinable kinds, but nor require particular individual tropes of these kinds: its dependence will be specific, not individual.⁴⁹

⁴⁸ Peter Simons, “Particulars in Particular Clothing: Three Trope Theories of Substance,” *Philosophy and Phenomenological Research* 54, no. 3 (Sep., 1994): 567.

⁴⁹ Ibid.

This inner nucleus serves as the substratum for the outer, accidental tropes and the substance itself. In this way, nuclear theory combines parts of substratum theory and bundle theory.

In order for the inner nucleus to act as the substratum, it must be bound together in a special way. Simons favors the way Husserl dealt with the regress resulting from unity being grounded in always another item, and therefore no unity can be achieved. Husserl's solution was to designate a special relation for the tropes of the inner nucleus: the *foundation relation*. This relation "binds things into a unity without requiring any further glue".⁵⁰ If left at just that, it is unclear what one is taking as primitive, but Husserl made an important distinction: weak foundation and strong foundation. Simons says of this distinction:

An individual *A* is *weakly founded* on an individual *B* iff *A* is necessarily such that it cannot exist unless *B* exists. An object is weakly founded on its essential proper parts. But there is another sense of foundation, more appropriate here, which says that *A* is *strongly founded* on *B* iff *A* is weakly founded on *B* and *B* is not a part of *A*.⁵¹

In order for this to work, foundation needs to be understood as operating at the species level; this account requires one to speak of "objects of a sort" requiring "objects of another sort".⁵² Simons notes that this only works when talking about cases of essential

⁵⁰ Ibid., 559.

⁵¹ Ibid.

⁵² Ibid.

compresence, meaning that more must be done to understand particular instances of *this* or *that* trope.

Another key part of Husserl's influence on nuclear theory is the notion of a *foundational system*. Simons borrows the Husserlian notion of a "whole in the pregnant sense"⁵³ to argue that two particulars are *directly foundationally related* if either a weak or strong foundation holds between them. In other words, one must be founded—weakly or strongly—on the other. Furthermore, a *foundational relation* is present when two particulars bear "the ancestral of the relation of the direct foundational relatedness to one another".⁵⁴ Simons uses these to postulate a *foundational system* which is present when all members are foundationally related to one another, and, importantly, no member is foundationally related to anything outside the "collection". The upshot of this "foundational system" is that the dependence needs of all members are satisfied within the collection thereby connecting *all* members of the collection. Simons supplements this with a principle: "a collection of particulars, all of whose foundational needs are met within the collection, is itself independent".⁵⁵ Now, Simons has established that the inner nucleus of a substance is not simply a group of random tropes, but rather it is a collection of tropes that, by their nature, are founded on one another to form a unified, independent nucleus.

⁵³ Ibid., 562.

⁵⁴ Ibid.

⁵⁵ Ibid.

Having discussed the nature of the inner nucleus of Simons' substance, we can now look at the outer, accidental tropes. These tropes depend on the inner core for their existence, but the nucleus only needs one member of a given trope family (e.g., a red trope is determinate and therefore the color family of tropes is the determinable). Simons formulates this two-stage approach to help account for change; having established an inner nucleus that forms the *individual essence* of the substance, it is clear that a substance can "shed" its outer tropes and gain new ones, of the same family, while maintaining a continuing identity as the same substance.

Simons thinks that his nuclear theory has a few advantages over competing views of substance. First, he thinks that his view allows for flexibility. The inner nucleus can be complex, or simple; the outer, accidental tropes ("halo") can be legion or even non-existent. Simons thinks that his view can accommodate Leibnizian monads: substances composed solely of an inner nucleus of tropes, meaning that all properties are essential. These might be the building blocks of the universe and the only change they can undergo is complete annihilation. Another kind of flexibility would be to allow for the outer halo to be composed of "clumps" rather than individual accidental tropes. These clumps would have a type of nucleus that satisfies some of its dependence needs, relying on the substantial nucleus for the rest its needs. Simons ends his paper calling others to fortify nuclear bundle theory; his call was answered recently by Markku Keinanen.

Strong Nuclear Theory

In a recent paper, “Tropes – The Basic Constituents of Powerful Particulars”, Markku Keinanen builds on Simons nuclear theory to formulate an updated version of this sophisticated bundle theory. To this end, Keinanen first finds fault with Simons’ nuclear theory, then discusses Brian Ellis’ *dispositional essentialism* to show the utility of a dispositionalist view of properties. Keinanen finds Ellis’ ontology to have redundant postulations, favoring the “qualitative economy”⁵⁶ of a trope ontology. Keinanen’s strong nuclear theory (SNT) is the result.

Keinanen identifies three problems for Simons’ nuclear theory. First, nuclear theory allows for substances constituted only by an inner nucleus without an outer, accidental halo of tropes. The problem lies in understanding *what kind of* substances can exist like this (i.e., without non-essential properties). The second problem Keinanen brings up is that nuclear theory does not prohibit two or more tropes that are in the same family (i.e., determinable) from constituting the same substance at the same time. If this is the case, then we could not know why the substance exemplifies such and such a determinate trope, given that (possibly) many similar determinable tropes constitute the same substance at the same time. The final problem with Simons’ nuclear theory is that the “formal relations of rigid and generic dependence do not constrain the *spatio-*

⁵⁶ Markku Keinanen, “Tropes – The Basis Constituents of Powerful Particulars,” *Dialectica* 65, no. 3 (2011): 420.

temporal locations of tropes in any manner”.⁵⁷ This means that the constituent tropes of a substance are not *necessarily* “close-by” to one another either temporally or spatially, so to speak. For these reasons, Keinanen finds Simons’ nuclear theory to be inadequate; major adaptations are necessary to keep a nuclear bundle theory viable.

In order to adopt a dispositional notion of properties in his thesis, strong nuclear theory, Keinanen first discusses Ellis’s *dispositional essentialism*. Ellis’ view rests on two pillars: (a) a *strict dispositionalist* conception of natural properties and (b) that every substance belongs to some natural kind. The first pillar states that “a dispositional property kind universal (kind of property tropes) specifies a generic natural kind of processes, which the objects instantiating the property necessarily undergo in certain circumstances”.⁵⁸ Basically, these dispositional properties necessarily give a substance definite causal powers. The second pillar—that all substances belong to some natural kind—says “each natural kind K has a *real essence* constituted by the necessary intrinsic properties of a substance belonging to kind K”.⁵⁹ In other words, since every substance belongs to a natural kind, the essential properties, or necessary intrinsic properties, of that substance are illustrative of the *real essence* of the kind the substance belongs to.

Keinanen presents SNT as a development of Simons’ nuclear theory, and indeed it is highly developed. I will quote the detailed theses of the theory and then discuss key parts in greater detail.

⁵⁷ Ibid., 434.

⁵⁸ Ibid., 423.

⁵⁹ Ibid., 424.

[SN1]: Any powerful particular, i , contains at least one nuclear trope. If it contains more than one nuclear trope, then the nuclear tropes are strongly rigidly dependent on each other. The nuclear tropes are necessary to i and determine the primary kind K to which i belongs.

[SN2]: Let $D_1 \dots D_k$ be a group of the distinct highest determinables, i.e., determinable kinds of tropes. Each nuclear trope of i necessarily falls under some of the determinables $D_1 \dots D_k$. There is at most one nuclear trope falling under each of these determinables.

[SN3]: Any trope t of a powerful particular of kind K is *generically dependent sde* [self-dependencies excluded] on the tropes falling under each of the determinables $D_1 \dots D_k$.

[SN4]: Assume that powerful particular i of kind K has two or more nuclear tropes. There must exist tropes falling under each of the determinables $D_1 \dots D_k$ *rigidly dependent sde* on the nuclear tropes of i . Each such trope is a part of some trope aggregate that is a part of i . Substance i does not have any other constituents.

Assume that substance i of kind K has a single nuclear trope. The above holds with the exception that there are no tropes falling under the same determinable D as the nuclear trope rigidly dependent on the nuclear trope.

If there is a nuclear trope of i falling under determinable D , there are no further tropes falling under D rigidly dependent on the nuclear tropes of i .

[SN5]: Trope t is a part of power particular i if and only if either t is the only nuclear trope of i (and t is not rigidly dependent on any trope) or the nuclear tropes of i are the only tropes on which t is rigidly dependent.

[SN6]: Assume that powerful particular i of kind K is constituted solely by its nuclear tropes falling under determinables $D_1 \dots D_k$. The powerful particulars of this specific type are among the minimal entities instantiating the basic spatio-temporal relations.

[SN7]: In addition to the substances fulfilling the conditions of [SN6], the following two kinds of trope aggregates are individuals that instantiate the basic spatio-temporal relations:

[1]: The trope nucleus of each powerful particular i (the *n-bundle*). The spatio-temporal location of the nucleus of each powerful particular i determines the spatio-temporal location of i .

[2]: Each trope bundle formed by the nucleus of some powerful particular i and single trope t one-sidedly rigidly dependent only on the nuclear tropes of i (the *c-bundle*).

[SN8]: The interval of time in which a *c-bundle* of substance i is located is a proper or improper part of the interval of time in which the *n-bundle* of i is located.

[SN9]: Necessarily, every property trope t is a part of some powerful particular i , i.e., it is neither the sole nuclear trope of some simple substance i or rigidly dependent only on the nuclear tropes of i .

[SN10]: Simple substances are trope bundles in which all of the rigid dependencies of their constituent tropes are fulfilled. Therefore, they are *strongly independent particulars*.⁶⁰

Keinanen lays out the conditions for tropes being part of substances in [SN1] – [SN5]. In order to combat the spatio-temporal location objection he raised against Simon’s nuclear theory, he gives us thesis [SN6]. Continuing on the theme of location, Keinanen also introduced three additional principles to help constrain the spatio-temporal location of tropes. To paraphrase, nuclear tropes are necessarily *compresent* and the location of the aggregate of nuclear tropes determines the spatio-temporal location of the substance. In contrast, contingent tropes are not necessarily compresent with the substance nor with one another. However, each contingent trope of a substance occupies a spatio-temporal location “that is a proper or improper part of the area occupied by [the substance]”.⁶¹

Key to SNT is the distinction between the *c-bundles* and the *n-bundles*. The *n-bundle* is the aggregate of nuclear tropes of every simple substance—this aggregate forms an individual that “locates” the substance. The *c-bundle* is the trope aggregate formed by contingent tropes and their respective nuclear substance. The *n-bundles* are aggregates of tropes that are mutually rigidly dependent on one another while the *c-bundles* are aggregates of contingent tropes that are rigidly dependent on their respective nuclear bundle. [SN8] also deals with the relationship between the *c-bundle* and the *n-bundle*. Keinanen argues that, since monadic properties are dispositional, there must be a

⁶⁰ Ibid., 436-47.

⁶¹ Ibid., 442.

“centre of influence”⁶² within each substance that acts as the “source” of its causal power.

To conclude the paper, Keinanen explicitly states that SNT “rejects primitive substances and substrata as redundant postulations... [and that], as a trope nominalist position, the SNT rejects substantial kind universals”.⁶³ For SNT, natural kinds (in the Aristotelian sense) are done away with; SNT says a substance is a member of a *primary* kind *because* it possesses nuclear tropes that belong to a certain determinate kind. In contrast, a neo-Aristotelian might say that a substance is a member of a natural kind, and *therefore* it has certain properties.

Conclusion

In this chapter, I have looked at some of the contemporary accounts of substance. While there are many games in town, bare particularism and bundle theory represent, in my opinion, the most viable options outside of traditional hylemorphism. The bare particularist emphasizes the unity that a substratum gives us, while the bundle theorist praises the dynamic nature and flexibility of bundles. But do we need both unity and dynamism? Can we settle for theory of substance that leaves important questions unanswered? I think that in order to address all of the *explananda* we are familiar with, we need a rich ontology that can account for the unity of substance as well as change.

⁶² Ibid., 445.

⁶³ Ibid., 448.

Furthermore, nothing has been said about teleology up to this point, and I think that intrinsic finality is a distinct advantage of hylemorphism—other theories cannot account for the unified actions of substances towards a narrow range of ends. That being said, I will now discuss the hylemorphism of Aristotle and Saint Thomas Aquinas.

CHAPTER III

HYLEMORPHISM

Any discussion of hylemorphism should be accompanied by a discussion of change. For A-T, the reality of change provides motivation to postulate the theory of hylemorphism. While complicated, this theory can support different types of change—allowing for the important distinction between accidental and substantial change. In order to do this, A-T must first explicate substance, highlighting the distinctions between substance and accident, essence and property, and matter and form. All these concepts come into play when discussing change.

In this chapter, I will first explain what is meant by *substance* for A-T. Distinctions between substance – accident and essence – property will be made, highlighting some of the major differences between traditional hylemorphism and contemporary accounts of substance. Next, I will discuss the role of *matter*. Following the traditional terminology, both prime matter and secondary matter will be explicated. Prime matter has always been a mystery for those who take it seriously, and I will have more on this mysterious character in the next chapter as well. Then, I will uncover what is meant by *form* in A-T metaphysics. The final section of this chapter will look at some contemporary defenders of hylemorphism and highlight a few clarifications that they make given the contemporary debates on substance.

TRADITIONAL HYLEMORPHISM

Thomistic hylemorphism holds that a substance is a *composite* of matter and form. However, it is critical to note that this composite is not like a “bundle” of matter and form, but rather this hylemorphism is a substratum theory. Like bare particularism in the previous chapter, Thomistic hylemorphism is committed to a constituent ontology comprised of a substratum plus properties—one key difference being that for hylemorphism the substratum is *non-individuating* (more on this in the next chapter). Substances are composed of matter and form; this two-fold composition reflects the mixture of *actuality* and *potentiality* in finite substances. For A-T, the reality of change necessitates this composition. The act-potency distinction is arguably the foundation of A-T metaphysics and therefore the importance of substance—this composite of matter and form, act and potency—becomes clear.

Unlike in the previous chapter on contemporary accounts of substance, Aquinas means something rather specific by the term *substance*. Aquinas, following Aristotle, comes to an understanding of substance in a very deliberate and detailed manner. Aristotle describes the “science” of metaphysics as being about substance, but even for Aristotle this term means many things. In his commentaries on Aristotle, Aquinas often ties works together making it much easier to follow the overall framework that Aristotle is setting up throughout his collected works. Concerning substance specifically, Aristotle’s *Categories* and *Metaphysics* are the primary sources; Aquinas’ commentary on Aristotle’s *Metaphysics* is one of the best places to find an archive (of sorts) of what

Aristotle meant by substance. The first major distinction made is between first and second substance:

Hence he [Aristotle] concludes that it is necessary to establish the truth “about this,” i.e., about this subject or **first** substance, because such a subject seems in the truest sense to be substance. Therefore, in the *Categories* it is said that such substance is said to be substance properly, principally and chiefly. For substances of this kind are by their very nature the subjects of all other things, namely, of species, genera and accidents; whereas **second** substance, i.e., genera and species, are the subjects of accidents alone. And they also have this nature only by reason of these first substances; for man is white inasmuch as this man is white.⁶⁴

The distinction between a concrete particular (in an informal, non-loaded sense!) and the genera or species is very clear, and it is likewise clear that substance can be used in both ways. The primacy of first substance (i.e. the individual subject) is apparent once one considers that all other things are predicated *of* first substance. To use Aquinas’ example: “man, animal, rational, capable of laughter and white are predicated of Socrates. However, a subject is not itself predicated of anything else, and this must be understood essentially.”⁶⁵ Hence, it is the *subject* that is first substance and it is this meaning of substance that A-T then breaks down into its composite of matter and form, act and potency.

⁶⁴ Thomas Aquinas, *Commentary on Aristotle’s Metaphysics*, trans. by John Rowan, ed. by Joseph Kenny (Chicago: Dumb Ox Books, 1961), bk. VII, 1274.

⁶⁵ *Ibid.*, 1273.

In order to rationalize the need for a composite, A-T first discusses the everyday phenomenon of change, or the *movement* from potency to act. The opening lines of Aquinas' early work, *De Principiis Naturae*, note the need for change. He begins:

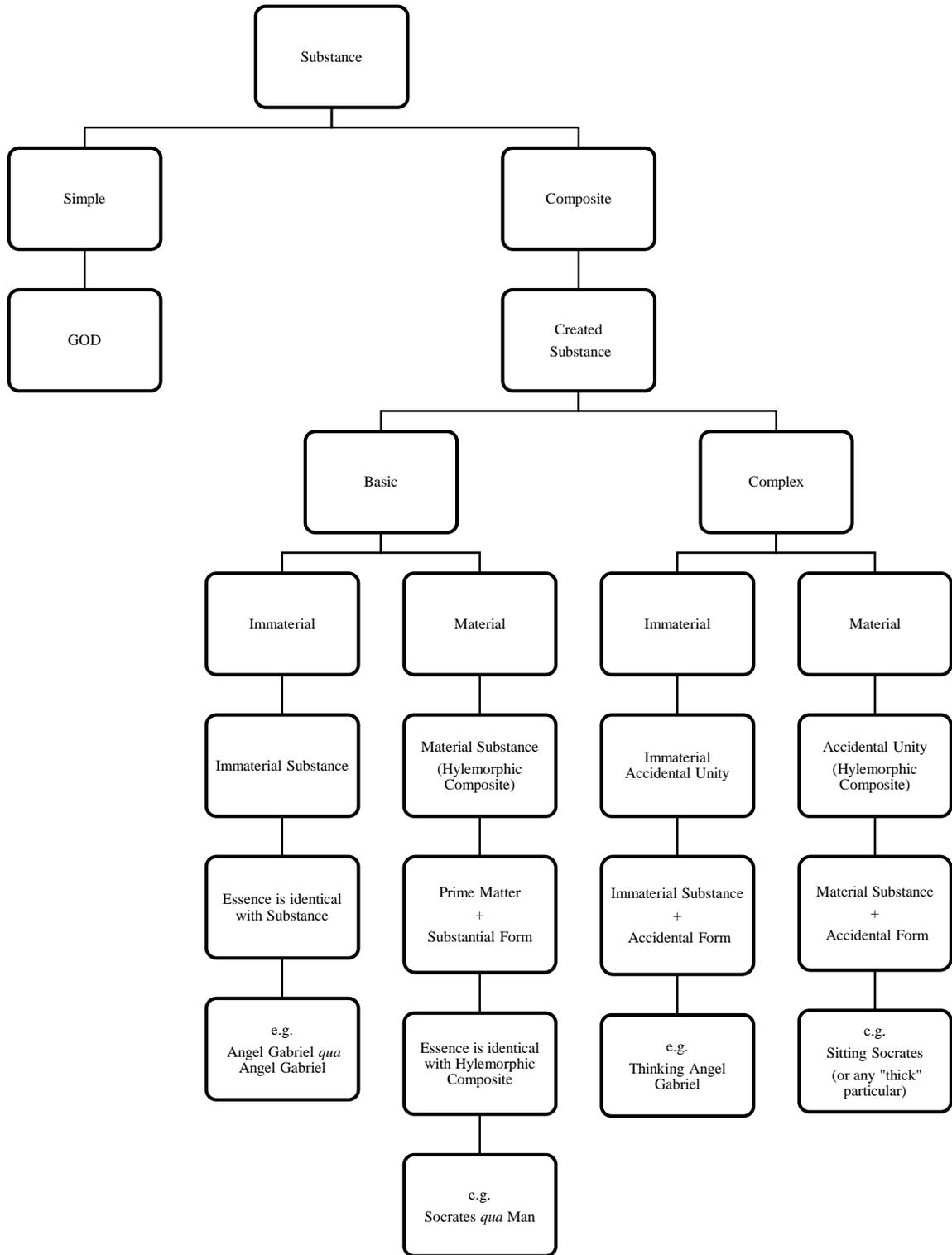
Since some things can be, although they are not, and some things now are; those which can be and are not are said to be potency, but those which already exist are said to be in act. But existence is twofold: one is essential existence or the substantial existence of a thing, for example man exists, and this is existence *simpliciter*. The other is accidental existence, for example man is white, and this is existence *secundum quid*.⁶⁶

These influential lines introduce a foundational distinction for A-T: the substantial-accidental distinction. Aquinas describes substantial existence as “essential”; in contrast, accidental existence is “*secundum quid*” or “following after something”, “qualified”. For A-T, substances are composed of something essential as well as something accidental: substances have a substantial form, that which makes a thing the *kind* of thing that it is, and accidental form that modifies the subject.

Another way to understand the distinction between substance and accident is to consider *being* itself. For A-T, either a thing exists independently (subsists) or a thing exists in, or *inheres* in, another. The former is substance and the latter are accidents. Substances are independently existing and serve as the *substratum* for accidents, which *inhere* in substance. In **figure 1** on the following page (37), I have diagrammed

⁶⁶ Thomas Aquinas, *De Principiis Naturae*, trans. by R. Kocourek, ed. by Joseph Kenny (St Paul, MN: North Central, 1948), 1.

Figure 1: Diagram of Substance



substance. As you will notice, God is the only substance that is (1) uncreated, and (2) simple, or without accidents—meaning that there is nothing non-essential in God. Furthermore, within the category of “created substance”, A-T provides a framework to explain both immaterial and material substances. Since God is the only substance that is simple, or without accidents, then all created substances are composites. In material substances, this composition is that of *prime matter* and *substantial form*. Therefore, hylemorphism is a theory about the matter-form composition in substance, which is unique to material substances.

From looking at **figure 1**, one may wonder why A-T would complicate the metaphysics of substance by postulating the “sub-theory” of hylemorphism. The answer is simple: hylemorphism, as a theory, addresses the problem of how members of the same *kind* can exist in the material world—how can these material substances be both similar and dissimilar? Famously, Aquinas held that there cannot be more than one member of any essential kind in immaterial substances as there is no *matter* to individuate them from one another. Hylemorphism makes a distinction between two types of matter and two types of form in order to address change and individuation. I will now sketch out the theory of hylemorphism.

Implicit in the opening lines of *De Principiis Naturae* is the idea that *nothing comes from nothing*, meaning that if change is a real feature of the world, then what comes to be must come from *something*. Furthermore, since we observe different kinds of change in the natural world, it seems necessary to postulate different “somethings” from which changes occur. For hylemorphism, the “somethings” from which changes

occur is *matter*. Aquinas argues that both substantial and accidental existence have a potency, namely, matter: “for example sperm is the matter of man and man is the matter of whiteness”.⁶⁷ Now, the scientific truth of this statement is not of interest, what is important is role of matter in both the substantial and accidental. “Sperm [as] the matter of man” contrasted with “man [as] the matter of whiteness” gives us an understanding of why A-T must distinguish between two types of matter. We need matter that exists in potency to substantial form as well as matter that exists in potency to accidental form; matter is the “something” from which change occurs.

The two types of matter in A-T metaphysics are *prime matter* and *secondary matter*, or the subject/substance. Aquinas clarifies what is meant by “matter”:

But these differ, because that which is in potency to substantial existence is called the matter from which, but that which is in potency to accidental existence is called the matter in which. Again, properly speaking, that which is in potency to substantial existence is called *prime matter*, but that which is in potency to accidental existence is called the *subject*. Thus we say that accidents are in a subject; but we do not say that the substantial form is in a subject.⁶⁸

Secondary matter, which is the substance itself as the *substratum*, as the matter in which accidental change can occur is perfectly intuitive—the substance itself *survives* an accidental change and thereby ties, in terms of time, the substance *after* an accidental change to the substance prior, in time, to the accidental change. The substance changes something non-essential, as any substantial change would destroy the substance.

⁶⁷ Aquinas, *De Principiis Naturae*, 2.

⁶⁸ *Ibid.*, 3

In contrast, substantial change requires a much different kind of matter: prime matter. Prime matter exists in potency to substantial form. It is truly an odd thing to think about “because all knowledge and every definition comes by way of the form, [so] prime matter cannot be defined or known in itself but only through the composite”.⁶⁹ We come to know that prime matter exists precisely in the context of substantial change. In order for substantial change to be a real feature of the world, given that nothing comes from nothing, *something* must be in potency to act as the “from which” a new substance comes to be. Substances do not simply “pop” into existence—this would be absurd. Aquinas uses a bronze statue to illustrate the difference between prime matter and secondary matter:

We should notice, too, that some matter has a composition of form, for example bronze. For, although it is matter with respect to the statue, the bronze itself is composed of matter and form. Therefore, bronze is not called prime matter, even though it has matter. However, that matter which is understood without any form and privation, but rather is subject to form and privation, is called prime matter by the reason of the fact that there is no other matter before it.⁷⁰

In accidental change, the substance survives as the subject of change; in substantial change, prime matter is the subject of change. One might interject that prime matter, too, must have some form and must thereby explain its own composition—but Aquinas disagrees. Prime matter is unknowable in itself; it becomes known in the context of substantial change.

⁶⁹ Ibid., 14.

⁷⁰ Ibid., 14.

Prime matter, by definition, is without form and therefore it cannot be generated or corrupted. Aquinas comes to this strange conclusion by thinking about generation in general: in generation something comes from something, meaning that from *something* comes some *other* thing. Matter changes and terminates in some other form. If prime matter could also change, then it would lead to an infinite regress, since a further composite would need to explain prime matter's change, and so on. This argument also applies to form itself. For A-T, only the composite can be generated or corrupted; form and prime matter cannot.

As matter exists as the potency in both substantial and accidental existence, so *form* inheres in matter and thereby actualizes it. Substances, being composites of matter and form that reflect the act-potency composition found in all things, are themselves what they are by means of form. Aquinas argues:

But, just as everything which is in potency can be called matter, so also everything from which something has existence whether that existence be substantial or accidental, can be called form; for example, man, since he is white in potency, becomes actually white through whiteness, and sperm, since it is man in potency, becomes actually man through the soul. Also, because form causes existence in act, we say that the form is the act. However, that which causes substantial existence in act is called substantial form and that which causes accidental existence in act is called accidental form.⁷¹

Now we can say that a substance exists as such due to its substantial form and that accidental form causes something to “come into being as this, for example when a man comes into being as white, we do not say *simpliciter* that man comes into being or is

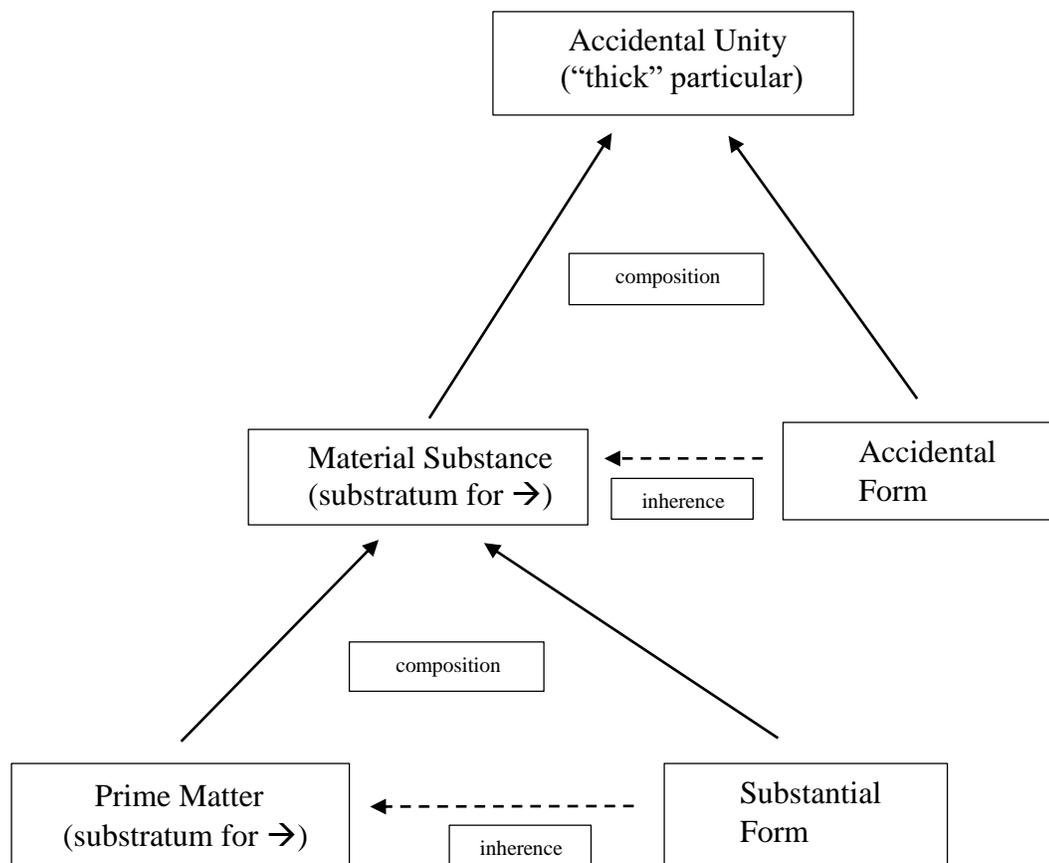
⁷¹ Ibid., 5.

generated, but that he comes into being or is generated as white *somehow*.”⁷² Substantial form is introduced in an instance of substantial change, where generation or corruption takes place; accidental form is introduced in an instance of accidental change, and the subject comes to exist *as this* or *in a certain way*.

To recap, a material substance is a hylemorphic composite of prime matter and substantial form. The substance, as such, is independently existing and it serves as the substratum for accidents, or, more precisely, for accidental form. Just as prime matter is the substratum for substantial form in a material substance, so secondary matter (the subject/substance itself) serves as the substratum for accidental form. When substantial form *inheres* in prime matter, together they compose a material substance; when accidental form *inheres* in secondary matter, which is the substance itself, together they compose an *accidental unity*. An accidental unity is a “thick” particular, or an ordinary object of our experience. To visualize the hylemorphic composition, refer to **figure 2** on the following page (43).

⁷² Ibid., 6.

Figure 2: Hylemorphic Composition



At this point in the discussion of hylemorphism, it is important to understand how *essence* fits into the story. For A-T, essence, or “*quiddity*, essential structure, or nature”,⁷³ is distinct from substance and substantial form in material substances.

Aquinas, commenting on book VII of Aristotle’s *Metaphysics*, says:

⁷³ Aquinas, *Commentary on Aristotle’s Metaphysics*, VII, 1271.

Regarding *essence*, it should first of all be borne in mind that it must be predicated of a thing essentially; for those things which are predicated of a thing accidentally do not belong to its essence. For by the essence of a thing we mean the proper answer which can be given to the question asking what it is. And when we ask what a thing is we cannot give a proper answer by mentioning attributes which belong to it accidentally; for when someone asks what man is, one cannot answer that he is white or sitting or musical. Hence none of those attributes which are predicated of a thing accidentally belong to its essence; for being you is not being musical.⁷⁴

From this, we know that essence can be contrasted with *accident*, which is anything that belongs to substance without necessity. This distinction between essence and accident is important for hylemorphism as it allows one to distinguish between essence and property, as properties are but one kind of accident. For A-T, the essence of a thing is “the concept ‘which expresses what each thing is,’ i.e., which describes the predicate, ‘but does not contain the thing itself,’ i.e., the subject, will be the concept of the essence in each particular thing. Hence animal belongs to the essence of man”.⁷⁵

While essence is that which makes a thing knowable, accidents are what makes a thing exist in this or that way. There are two kinds of accidents for A-T: proper and contingent. *Proper* accidents are those accidents that *flow* from the essence or nature of a thing. By “flow”, A-T simply means that proper accidents are formally caused by, and originate from, the essence. In contrast, *contingent* accidents are those accidents that are contingent to a natural kind essence. However, A-T think there are two types of contingent accidents: inseparable and separable. *Inseparable* contingent accidents are

⁷⁴ Ibid., 1309.

⁷⁵ Ibid., 1313.

those accidents that are contingent to a natural kind essence, but are inseparable from a particular substance (e.g., gender properties). *Separable* contingent accidents are those accidents that are contingent to a natural kind essence, and are separable from a particular substance (e.g., hair color, etc.). I will note that *proper accidents* are similar to “essential properties” as the term is used today, although A-T are explicit that the essence is distinct from any accidents/properties.

In defining the essence of a thing one cannot make reference to the subject in the definition. For instance, say we have a wet dog. Aquinas would contend that “wetness” cannot be part of the essence of dog because, to be a dog, a thing need not be wet.

Furthermore, what it means to be wet is far different from what it means to be a dog.

Aquinas continues to say that:

Thus it is clear that essence will not be found in any of those things which are not classed among the species of some genus, but “in these alone,” i.e., in the species alone. For species alone may be defined, since every definition is composed of genus and difference. But that which is contained under a genus and is constituted of differences is a species, and therefore definition pertains only to species. For species alone seem not to be predicated according to participation and affection or as an accident.⁷⁶

For A-T, empirical observation and science in general colors in the picture of the natural world, so to speak. The role of metaphysics is to describe the structure of reality and being as such, not to catalogue all the plants and animals. This understanding of essence is basically a species concept of sorts. Therefore, it is important to have as much data and observation as possible in order to “get it right” in terms of defining a species so that

⁷⁶ Ibid., 1327.

its *specific difference* is highlighted, that which makes the substance unique and easily identifiable. In the case of human beings, it is generally established that we are *rational animals*, and this is an example Aquinas uses. He says that “animal is predicated of man essentially, and in a similar way rational is predicated of animal. Hence the expression *rational animal* is the definition of man”.⁷⁷ It is critical to note that this notion of essence (and A-T metaphysics in general) is *not* hopelessly committed to the science contemporaneous with Aquinas himself, nor to the science of the twenty-first century. I would argue that A-T metaphysics is even more appealing today than it ever has been precisely because of the success of science over the years.

CONTEMPORARY HYLEMORPHISM

While hylemorphism has historically dominated much of Western philosophy, especially during the Middle Ages, it remains a fringe view in metaphysics today. Many are attracted to versions of bundle theory or bare particularism in order to avoid the ontological commitments associated with hylemorphism. However, several defenders of hylemorphism have continued to carry the torch, making sense of historical critiques and novel objections against this theory. Three such defenders are Anna Marmodoro, David Oderberg, and Edward Feser. I will briefly look at some of their work in order to set up

⁷⁷ Ibid., 1326.

my defense of hylemorphism against nuclear bundle theory and bare particularism in the next chapter.

Marmodoro wrote a paper in response to some “reconditioned” versions of Aristotle’s hylemorphism. In this paper, she argues that all three reconditioned versions are motivated by a misunderstanding of traditional hylemorphism. She says that “Aristotle is often presented as championing *mereological hylomorphism*, which treats the matter and form of a substance as *parts* of the substance...I side with the line of interpretation according to which Aristotle is *not* a mereological hylomorphist”.⁷⁸ Not only does she believe that these reconditioning attempts fail to capture traditional hylemorphism, but she argues that these reconditioned versions make the argument for Aristotle’s own hylemorphism even stronger.

First, she addresses Kathryn Koslicki’s development of the hylemorphic composition in which the unity of the substance is “derived or *borrowed from the unity of one of its parts*”.⁷⁹ Koslicki thinks that a substance is unified by the “ultimate mereological atom”⁸⁰ in a substance, which she says is the substantial form. But Marmodoro notes that implicit in this is the notion that this oneness of the substantial form (the mereological atom) amounts to its simplicity. Koslicki thinks that this does not work well because the substantial form itself is divisible, as a form of a substance has parts. Therefore, substantial form cannot be the atom of the substance, and therefore the

⁷⁸ Anna Marmodoro, “Aristotle’s Hylomorphism Without Reconditioning,” *Philosophical Quarterly* 36, no. 2 (2013): 6.

⁷⁹ Ibid.

⁸⁰ Ibid.

unity of substance comes into question. Marmodoro responds to Koslicki by noting that Aristotle explicitly thought that the unity of a substance comes from the metaphysical unity “attained in the hylomorphic compound”.⁸¹ Furthermore, Marmodoro clarifies Aristotle’s understanding of the role of substantial form in the composite: the oneness of a substance comes from the substantial form *inhering* in the matter of the substance.

Next, Marmodoro addresses some of the work E.J. Lowe has done on hylemorphism. Lowe’s reconditioning attempt questions the role of prime matter in traditional hylemorphism. Basically, Lowe thinks that matter is not needed to explain the generation of a new substance. Using a hydrogen molecule as an example, Marmodoro says:

On Lowe’s way of thinking about the given example, the proton and the electron are there before and after the creation of the hydrogen atom: there is not a need for a material continuant that takes on a new form when a new substance is created, because nothing *takes on* a new form in this example, even if a new form is created of the composite.⁸²

Marmodoro notes that this reconditioning runs amuck when one considers the difference between the isolated atoms and the atoms when combined in the molecule—is this just a primitive difference? If any two substances survive as they were before when combined into a new substance, what unifies the new substance? Lowe tries to get rid of matter but Marmodoro exposes the critical role matter plays in the composite: form must *enform*

⁸¹ Ibid., 7.

⁸² Ibid., 11.

something. Furthermore, in cases of change, it seems necessary to postulate a material continuant, prime matter or secondary matter (the subject/substance).

The final reconditioning attempt that Marmodoro addresses is Michael Rea's. Rea's paper in question, "Hylomorphism Reconditioned", argues that we ought to reformulate hylomorphism from the standpoint of dispositional monism. For Rea, location and power give us the best way to characterize the needs of the hylomorphist. Marmodoro notes that Rea's notion of powers is problematic, as he thinks of them as *neither* universal nor particular. Aristotle himself introduced universals to explain the similarities found in nature—where does Rea's position leave one with regards to resemblance and similarity? Furthermore, Marmodoro thinks that Rea recommit himself to an "ontology of power universals, which are particularized upon being instantiated by spacetime regions".⁸³ In the end, Marmodoro thinks that Rea's reconditioning attempt is difficult to follow and it likely comes closer to traditional Aristotle than expected.

Having looked at three reconditioning attempts in the contemporary literature, Marmodoro then explains why Aristotle was not a mereological hylomorphist. She says:

It is a fundamental conclusion of Aristotle's metaphysics that matter and form are *not parts* of a substance, because if they were, the substance in questions would not be unified...[the] intuition of the Homonymy Principle expresses that substantial unity is not the result of addition or attachment of parts. If it were so, the parts of a whole would exist when severed from the whole. But the parts cease to be when severed.⁸⁴

⁸³ Ibid., 15.

⁸⁴ Marmodoro, 15.

When we think of the human body, we can talk about a human arm, leg, and finger as being just that: an arm, a leg, and a finger. But we only know them as such when these parts are attached to the human body as a whole. A severed leg has lost its identity and functionality. A leg has a specific function given the unifying substantial form of the human person. Marmodoro argues that Aristotle is quite clear about this, and therefore any attacks on mereological hylemorphism are not actually a threat to the traditional hylemorphism. She finishes with a suggestion as to what is meant by the substantial form “unifying” the elements of a substance. She says:

Since what is needed is the shedding of only the distinctness of the elements, the role of this unifying principle must be just that: to strip the elements of their distinctness. I conclude, therefore, that the substantial form according to Aristotle is *an operation* on the elements of a substance, stripping them of their distinctness, rather than being an item in the ontology.⁸⁵

This is a very interesting idea. Instead of thinking about substantial form as an ontological item, it is more accurate to think of it as an operation on the elements of a substance. My concern would be that the substantial form does more than just “repurpose” the material elements of a substance, it also directs the composite to certain ends—perhaps the stripping and repurposing inevitably directs the composite. Regardless of the implications of this new hylemorphic operation, Marmodoro ably defends Aristotle’s hylemorphism, showing that the appeal to this theory is very much alive and well.

⁸⁵ Ibid., 17.

David Oderberg's insightful book, *Real Essentialism*, defends the a traditional A-T metaphysics, of which substantial change is a major part. Following Aquinas, Oderberg frames much of his discussion about hylemorphism with substantial change. Oderberg argues that there are three alternative ways of explaining substantial change—I will follow his argument to help set-up the next chapter in which I will defend hylemorphism against nuclear bundle theory and bare particularism.

The first way to explain substantial change is to “do away with talk of supports altogether”.⁸⁶ Oderberg uses the example of a wall: the substantial change is hammering the wall into rubble and the accidental change is painting the wall from red to green. So the question becomes, what changes in each instance of change? If you say “the wall” then it is unclear what is meant by “change,” since it is clear that the two types of change are different. In the case of substantial change, a wall ceases to be; in the case of accidental change, the wall changes but remains standing. Oderberg notes that if one gets caught up in “naming” the difference between the two types of change, the main problem still remains: when a wall ceases to be, a pile of rubble does not simply “pop” into existence since creation and annihilation are impossible given the understanding of energy in modern physics.

Since the first way of understanding substantial change failed, Oderberg then turns to an obvious alternative explanation: when the wall is hammered down, it is the matter of the wall that is the rubble and therefore the matter survives the substantial

⁸⁶ David Oderberg, *Real Essentialism* (New York, NY: Routledge, 2007), 73.

change. While intuitive at first, this explanation runs into trouble when different kinds of change occur. Oderberg objects:

The reason is that the support used to explain substantial change cannot be something whose existence during the change is not guaranteed. When the wall is hammered into rubble some matter survives in the rubble but other matter is dispersed to the winds. The matter of the wall undergoes all sorts of atomic and molecular changes as a result of the hammering: if the wall is pulverized, are we to say that the heap of fine powder before us is the same matter as that of the wall?⁸⁷

One may object and say that all change is survived by matter—particles of some kind perhaps—and therefore *that* matter can explain substantial change. Oderberg thinks that the current physics indicates that even quarks can substantially change, so we run into a similar problem of there being no guarantee that we have “changeless quarks” throughout the transformation.

To hammer the point home, Oderberg uses a water molecule to highlight a critical part of hylemorphism. A water molecule is composed of two hydrogen atoms and one oxygen atom. But if the train of thought above is right, then the water molecule *actually* contains both hydrogen and oxygen, since matter survives substantial change. If this is true, then we could expect a water molecule to have all the properties of its two parts, hydrogen and oxygen. But water does not; in fact, water has very different properties from either atom. This is precisely the point Oderberg wants to make. When oxygen and hydrogen combine and form a water molecule, they must undergo a

⁸⁷ Ibid., 74.

transformation in which they *lose* their distinctness, meaning that they lose their characteristic properties. The hylemorphist can explain this by saying that the substantial form of the water molecule *actualizes* the prime matter of the substance and the hydrogen and oxygen are only *virtually* present in the new substance. For these reasons, substantial change cannot be understood as being survived by secondary matter (also called *proximate matter*). Oderberg argues that the third and final way to explain the phenomenon of substantial change is to adopt hylemorphism, in which prime matter is the subject of substantial change.

Finally, I would like to look briefly at the work of Edward Feser, who has ardently defended the work of A-T through various written works and speaking engagements. In his book, *Scholastic Metaphysics*, Feser emphasizes the role of substantial form and the “marks” of a natural substance. He says:

The basic idea is that a natural object is one whose characteristic behavior—the ways in which it manifests either stability or changes of various sorts—derives from something intrinsic to it...now the difference between that which has such an intrinsic principle of operation and that which does not is essentially the difference between something having a substantial form and something having a merely accidental form.⁸⁸

Intrinsic finality, as scholastics refer to it, is the idea that natural substances are directed towards certain ends, or certain ranges of ends. A natural substance is a mixture of substantial form and prime matter, essence and accidents, actuality and potency; yet, the substance is unified. Substantial form is the mark of a natural substance precisely

⁸⁸ Edward Feser, *Scholastic Metaphysics* (Piscataway, NJ: Transaction, 2014), 164-5.

because the substance is *internally* unified and directly towards its own characteristic end. This is the principle of intrinsic finality.

Feser also defends the crucial distinction between essence and accident. The term “property” is tossed about quite often in contemporary metaphysics, but an A-T theorist must carefully qualify what is meant by “property”. As discussed in length above, a substance has an essence which in turn reflects the specific distinction at the genus level. Thus, the essence of a human being is *rational animal*. But what does this mean? Feser contends that:

A property is just one kind of accident, [and] an essence isn’t in the first place a collection even of properties or proper accidents, an accident can be a property even if it doesn’t always manifest itself, and appeal to possible worlds to determine a thing’s essence gets things backwards.⁸⁹

From this, we know that properties *flow* from the essence/nature, or they are *proper to* the essence. For Aquinas, a property is just a proper accident of a substance. This allows him to account for defective instances of a kind. For example, think of a mentally challenged human being; this person may or may not have the power to exercise reason, think abstract thoughts, and the like. For Aquinas and Aristotle, “this doesn’t entail that these aren’t really properties after all, but rather that the manifestation of a thing’s properties can be frustrated”.⁹⁰ Being able to distinguish between a “normal” and defective instance of a kind is of great value, and I think that Feser makes a strong case for one to opt for hylemorphism and the metaphysics of A-T.

⁸⁹ Ibid., 192.

⁹⁰ Ibid.

Conclusion

In this chapter I have explicated the traditional hylemorphism of Aristotle and Aquinas. First, I examined the theory from the words of Saint Thomas himself, primarily utilizing his *Commentary on Aristotle's Metaphysics* and *De Principiis Naturae*. In the next chapter, I will use examples of change to argue that hylemorphism is preferable to contemporary accounts of substance because it is able to explain both substantial and accidental change and it can account for the teleological nature of substance.

CHAPTER IV

A DEFENSE OF HYLEMORPHISM

In the previous two chapters, I have laid out the bare particularist, nuclear bundle theorist, and hylemorphist views. Now, I will argue that hylemorphism is preferable to both bare particularism and bundle theory. To do this, I will provide two cases of change—one accidental, the other substantial. I will refer back to these examples throughout my argument.

For a paradigm case of accidental change, think of a man who goes to the beach and soaks up the sun for an afternoon. Before this trip to the beach, he is pale; after the trip, he is tan. *He* remains the same person, yet he does change. For a paradigm case of substantial change, think of an acorn becoming an oak tree. The acorn does indeed *become* the oak tree. With proper nutrients and sunlight, the acorn ceases to be an acorn and *it*, or rather the something that remains, becomes a tiny oak tree that will grow into a mighty tree with time.

I will assume the intuitive notion that *nothing comes from nothing*. It is important to be clear on this because it will require one to locate that which remains or endures during any change. In fact, it is from this notion and in conjunction with instances of change where a substance, or subject, comes to be or ceases to be that we arrive at the A-T understanding of *prime matter*. Prime matter is made known to us in the context of change—it is that which endures substantial change.

HYLEMORPHISM VS. BUNDLE THEORY

As you recall, Peter Simon's Nuclear Theory and Markku Keinanen's Strong Nuclear Theory are, arguably, the most sophisticated bundle theories on the market today. But how do these contemporary accounts of substance measure up against hylemorphism in terms of change? Much of the literature on substance today does *not* focus on change and how we are to explain it. I think that the phenomenon of change itself provoked the ancient Greeks to delve into the metaphysical structure of substance. For this reason, I think it necessary to ground a comparison of the theories in examples of change.

In our case of accidental change, Simon's nuclear theory has a ready explanation in hand. Since the man, let's call him Tom, is actually a bundle of tropes, the first question becomes, 'How is Tom a unified entity?' Nuclear theory says something like this: Tom, being a human being, has a certain *nucleus* of tropes that acts as an essence of sorts. This nuclear bundle serves as the *substratum* for the outer, contingent tropes that Tom has. "Pale-ness" would be one such contingent trope, as would "tan-ness". So in this example of change, "Tom", or more accurately, Tom's outer bundle, loses one trope but gains another. But this is okay for Tom, since the "tan-ness" trope and "pale-ness" trope are in the same family of tropes. SNT has a similar understanding of accidental change: the *n-bundle* forms the nucleus of a substance and serves as the substratum for the accidental bundles of tropes, which are themselves "bundled" together with the nucleus to form the *c-bundle*. Simons thinks that "the nucleus is thus itself a tight bundle

that serves as the substratum to the looser bundle of accidental tropes, and accounts for their all being together”.⁹¹

The reason that NT and SNT are distinct from other formulations of bundle theory is that they postulate a nucleus in the substance. The rationale behind the nucleus is simple: (1) we need a way to distinguish between essential and accidental properties, and (2) we need a substratum to support the non-essential properties of a substance. However, while NT and SNT give us a substratum to support the accidental properties of a substance and likewise to serve as the support through accidental change, neither NT or SNT can give a similar account in the case of substantial change.

In the case of substantial change, bundle theory runs into serious problems. Recall that we are firmly committed to the notion that *nothing comes from nothing*, therefore in cases of substantial change where a substance ceases to exist and a new one comes to exist *something* must survive/endure the change. Simons is clear that the nuclear bundle of tropes—his foundational system—serves as the substratum for the outer bundle of accidental tropes. Simons acknowledges that “if we had a separate substrate substance for the nucleus instead of accepting a bundle theory, we would arrive at a theory rather like that of Aristotle or Thomas”.⁹² NT does away with an ultimate substratum for sake of simplicity, but because of this trade-off, nuclear bundle theory cannot account for substantial change. The same applies for SNT.

⁹¹ Simons, “Particulars in Particular Clothing”, 568.

⁹² Ibid.

Take our example of substantial change, the acorn becomes the oak tree. An acorn has properties that an oak tree does not—yet it is impossible to deny that one does not *become* the other. How can bundle theory account for this radical notion of change in which we have substance cessation and substance introduction? The acorn and oak tree have unique sets of essential properties that form the *essence* of each respective substance for bundle theory, and if the only substratum available to nuclear theory is the nuclear bundle, then it seems that when the acorn becomes an oak tree *nothing* survives this change. If the nuclear bundle contains tropes that are mutually dependent on all members of the collection, then any substantial change would destroy the “unity” of the nuclear bundle and therefore would destroy the substance. The nuclear bundle theorist might counter that some of the tropes survive the change to form the new nuclear bundle of the new substance—but this suggests that the tropes are independent, not the substance. Furthermore, since both NT and SNT are clear that the nucleus forms a tight bundle in which all members are rigidly dependent on one another, this option does not seem to be available to the nuclear bundle theorist—it would undermine their motivation to postulate a nucleus in the first place. If the tropes in the nuclear bundle were not as tightly bound so that a substance could survive losing a nuclear trope, then it would be a misrepresentation to call the nucleus the essence of a substance if part of the essence is, in fact, non-essential.

To recap: both Simons’ NT and Keinanen’s SNT reject an ultimate substratum in substance so neither theory can account for substantial change without admitting that either: (a) certain tropes survive substantial change, or (b) that *something* does in fact

come from *nothing*. Now, admitting (a) would violate rigid dependence and the foundational system of SNT and NT, respectively, as the nuclear tropes could, in fact, exist apart from their nuclear bundle. Admitting (b) would be conceptually difficult: if nothing survives instances of substantial change, then every case of substantial change would require substances to simply pop into existence without any substratum underlying the change.

Nuclear bundle theory's inability to account for substantial change was anticipated by Arda Denkel in his paper, "On the Compresence of Tropes".⁹³ He says that:

[There] are situations in which the so-called kernel of the object changes without the peripheral layer of contingent properties being lost, and it is hard to understand how Simon's theory, which endows essences with the function of a substratum, will permit such a thing.⁹⁴

He concludes that the internal, foundational relations that bind the nuclear tropes together in NT cannot exist as they do since, in our experience, substantial change does not result in annihilation of the object. Instead, Denkel opts for a weaker, internal relation to bind the nuclear tropes in order to allow a support for accidental tropes in the case of substantial change. He calls this relation *saturation*. On his view, "if B is a

⁹³ Arda Denkel, "On the Compresence of Tropes," *Philosophy and Phenomenological Research* 57, no.3 (1997): 599-606.

⁹⁴ *Ibid.*, 601.

saturation of A, A cannot exist in space and time unless it shares its position with B, or with any one of B's "substitutes".⁹⁵

While this is an interesting take on nuclear bundle theory, I do not think that Denkel is successful in accounting for substantial change in nuclear bundle theory. First, he is inconsistent in his use of "change". When he critiques Simon's NT, he is clear on a distinction between alteration (i.e., accidental change) and substantial change. However, for the remainder of the paper, he is not clear on what type of change his reformulation of nuclear bundle theory can account for. At one point, he says that "one can envisage a somewhat weaker link that would allow ordinary change, i.e., the replacement of tropes without total disintegration".⁹⁶ Is "ordinary" change substantial or accidental—both are "ordinary" in the sense that they occur all the time. His qualification of ordinary change is not helpful, as accidental change can be thought of like that, and even substantial change might be thought of like that in a bundle theory, assuming that the nucleus was not a foundational system or some other rigid, interdependent system. Furthermore, in the case of organism ceasing to be alive, while the organic material is very much the same before and after the substantial change, the organism surely has lots of properties that are essential to it *qua* a living organism. How would Denkel explain this? It seems that the only way a nucleus can change and yet remain a support for its accidental tropes is by *substituting* determinate tropes for other determinate tropes under the same determinable. What about properties that exist solely in higher organisms? Take a human

⁹⁵ Ibid., 605.

⁹⁶ Ibid., 603.

being's capacity for humor: when a human being dies, the capacity for humor is not *substituted* by some other (inevitably) similar property in the lifeless physical body that remains—it is just gone. While Denkel does anticipate my objection to nuclear bundle theory on the grounds that it cannot account for substantial change, I think that Denkel's solution to revive the theory does not work. By rejecting ultimate substrata, bundle theory cannot, in principle, explain the common phenomenon of substantial change.

Hylemorphism admits of an ultimate substratum, *prime matter*, precisely because of the phenomenon of substantial change. That substantial change occurs is substantially supported in our everyday life. For this reason, I find hylemorphism a more attractive view of substance than any bundle theory, including NT and SNT. The absence of an ultimate substratum makes the prospect of change impossible for the bundle theorist. Substances need an ultimate substratum to account for the intuitive idea that there is a distinction between properties and their bearers. While this last point suggests that bare particularism enjoys an advantage over bundle theory, contemporary substratum theories are still inferior to traditional hylemorphism.

PRIME MATTER VS. BARE PARTICULARS

The role of a bare particular is that of an individuator, according to contemporary bare particularism. For this to be true, the bare particularist must admit that the bare particular of a substance is indeed an individual, since it must individuate. In contemporary bare particularism, the bare particular individuates the substance and it also serves as the substratum, or “pin-cushion”, for the properties. In contrast, hylemorphism posits that the substratum of a substance is *matter*, and depending on which *composite* we are talking about, we must clarify what type of matter. This added level of complexity is necessary to preserve the essential-accidental distinction and it is an advantage of hylemorphism over bare particularism.

For the bare particularist, the only substratum is the bare particular itself. The nature of this bare particular, or how “bare” it actually is, depends on whom you are reading. Regardless of the nature of this substratum, hylemorphism enjoys a distinct advantage in that both accidental and essential change can occur. Recall that for A-T the subject of substantial change is prime matter and the subject of accidental change is secondary matter, which is the substance itself. The bare particularist cannot invoke a similar framework and therefore runs into problems. Jeffrey Brower lists a conjunction of claims that hylemorphism can preserve to support the intuitive appeal of hylemorphism.:

- (a) Socrates is a direct object of experience.
- (b) Socrates has at least some of his properties essentially.

- (c) Socrates possess at least some of his properties accidentally.
- (d) Our modal intuitions are objective.
- (e) Socrates is human, but not composed of anything distinct from himself that is human.
- (f) Particulars are always characterized by the properties they possess.
- (g) There is only one human in the place occupied by Socrates.
- (h) There are at least some properties by which Socrates alone is characterized.
- (g*) There is only one thing that is white in the place occupied by Socrates.
- (h*) There are at least some contingent (accidental) properties by which Socrates alone is characterized.⁹⁷

Brower’s argument that hylemorphism is preferable to bare particularism stems from three major differences between the two theories. First, the substratum in question is different. For bare particularism, the bare particular individuates and is characterized in a “thin” or “thick” sense. For hylemorphism, the ultimate substratum of substance is prime matter, which is formless and non-individual, and the substratum for accidental change is the substance, or secondary matter.

Second, the metaphysics of property possession is different. Recalling Wildman’s paper, “Load Bare-Ing Particulars, the bare particularist must make several qualifications about property possession. The substance and the bare particular both “have” properties, but the senses of *having* are distinct. In hylemorphism, the terminology is much different: a substance is composed of essence and accidents. A “property”, as we use it today, would be classified as an accident of a substance. More

⁹⁷ Jeffrey Brower, *Aquinas’s Ontology of the Material World* (Oxford, UK: Oxford University Press, 2014): 162-4.

concisely, an essential property (as it is used today) is a *proper accident* of a substance, meaning that it *flows* from, or is natural to, the substance. The basic idea is that “flow, as used by the Scholastics, captures the idea that the essence of a thing is *both* the formal cause and the origin of its properties”.⁹⁸ In contrast, an accidental property (as it is used today) is a *contingent accident* for A-T, meaning that essence does not essentially have this accident and it is not proper to the essence of the substance.

The motivation to preserve the terminology of Aristotle and Aquinas is not trivial. Edward Feser identifies three reasons to support the essence-accident composition of substance, and thereby avoid using “essential property” and “accidental property” in favor of *proper accident* and *contingent accident*. First, the essence must be distinct from its properties in order to have a unified substance. He says that “if an essence is a set of properties, then what is it that makes it the case that all and only the properties that make up a certain kind of thing’s essence occur together in that kind of thing?”⁹⁹ Appealing to laws of nature doesn’t work since laws of nature are shorthand for how thing/s operate given their essence. Second, Feser argues that by distinguishing between essence and properties, we are acknowledging the way we come to know natural substances. Aristotle and Aquinas would both agree that determining the essence of a substance is no easy feat; often, what we think is the essence is merely a property. The essence is that *from which* a thing’s properties flow. The third reason to make this distinction, and arguably the most important, is that it allows one to distinguish between

⁹⁸ Feser, *Scholastic Metaphysics*, 234.

⁹⁹ *Ibid.*, 231.

“normal” and “defective” instances of a kind. To revisit our example of substantial change, an acorn that does not become an oak tree is nonetheless an acorn. To become an oak tree, the environment needs to be a certain way, the amount of water and sunlight needs to be a certain way, and the acorn itself must be developed in such a way as an organism in order to change into an oak tree. Lots of things can go wrong—the acorn might be damaged—but the acorn is still *essentially* an acorn. Its capacities might be frustrated or blocked, but because it is the thing that it is, it has the *innate, active potential* to become an oak tree. If the essence of a substance was understood as a list of essential properties, then there would be fewer members of a given natural kind and there would be many more natural kinds!

The third major difference between hylemorphism and bare particularism according to Brower is their respective metaphysics of sameness. He frames this difference with more conjunctions:

- (3) Things sharing the same matter are identical (e.g., if we were selling Athena, we wouldn't charge for both the statue and the lump [of bronze], but only for a single object).
- (3a) Things sharing the same matter are numerically the same material object (more precisely, if x and y share all the same matter at t , then x is numerically the same material object as y at t).
- (3b) Distinct things cannot be numerically the same material object (more precisely, if x is numerically the same material object as y at t , then $x=y$ at t).¹⁰⁰

¹⁰⁰ Brower, 169.

Brower notes that bare particularists opt for *co-location* with regards to the problem of material constitution.¹⁰¹ He says that co-locationists deny (3) on grounds that (3a) is false but hylemorphists reject (3) on grounds that (3b) is false. Therefore, hylemorphists opt for the “numerical-sameness solution”¹⁰² to the problem of material constitution. This amounts to an advantage of hylemorphism over bare particularism with regards to the metaphysics of sameness since our common sense intuitions about the world “count” objects via their matter.

As has been discussed at length throughout this thesis, substantial change is the hallmark of hylemorphism. The entire reason to distinguish between *substrata* is to account for the different types of change. Brower notes that “familiar cases of substantial change call our attention to a type of intrinsic change whose possibility is rarely, if ever, considered in the contemporary literature”.¹⁰³ Substantial change is a major concern for any account of substance because it happens so often and it is radically different from accidental change. Its ability to explain substantial change gives hylemorphism a clear advantage over rival theories of substance. Hylemorphism is complicated and highly structured because there are complicated phenomena that need to be accounted for. For this reason, we ought not to seek the simplest theory; we need to start with *explananda* and go from there.

¹⁰¹ Ibid., 165-72.

¹⁰² Ibid., 169.

¹⁰³ Ibid., 182.

To recap, while bare particularism is able to make the distinction between a property and its bearer, it cannot make a distinction between essential and accidental properties. It seems the only way a bare particularist *could* make this distinction would be to look to the natures of the properties themselves—some are essential and others are accidental. However, a single instance of a property being essential in one substance and the same property being accidental in another substance would undermine this approach. Perhaps the bare particularist may embrace the consequence that all substances have their properties essentially; this is both counterintuitive and too high a price to pay.

TELEOLOGICAL NATURE OF SUBSTANCE

In my mind, the most attractive feature of hylemorphism is its ability to account for the *teleological nature* of substance. Theories of substance seek to explain our experience of substances as being both independent and unified. For A-T, a substance is unified by its essence in that all its proper accidents are *formally caused* by, and originating from, the essence. We are not left with a set of essential properties that just happen to all be located in this substance. For hylemorphism, the essence explains why a substance has the properties that it does. Specifically, the final cause of a substance directs a substance to certain characteristic functions/ends.

The idea that substances act for an end, or with a purpose, is explicit in Aquinas. He says that “every agent acts for an end: otherwise one thing would not follow more than another from the action of the agent, unless it were by chance”.¹⁰⁴ If a substance, acting as an agent (efficient cause), *naturally* generates an effect, then generating that effect must be the final cause of the agent. It is important to note that this does not entail that substances *necessarily* bring about their characteristic effects. As discussed above, ends can be frustrated. The final cause of the acorn—to become an oak tree—can be frustrated by internal damage or an extrinsic cause (e.g., the acorn is taken by the squirrel). We can say that a substance is unified in its actions, operations, and capacities through its final cause.

This sense of unity that comes from a unified purpose seems to be the best explanation of the actions/capacities of natural substances. There may be a number of proper accidents that naturally flow from the essence, giving the substance a range of powers/capacities. The properties, powers, or capabilities of a substance are *themselves* unified; an essence is not a collection of random properties. Man is a rational animal, making “rational animal” the essence of a human being. Having a heart, legs, and tissue *follows from* our animality, just as a sense of humor and our capacity for abstract thought *follows from* our rationality. The properties and capacities we have, *qua* human beings, are unified by our essence, which in turn is ultimately reflective of our final cause. The acorn’s *internal* ability to take in nutrients and to grow in a specific way are tied together for the purpose of becoming an oak tree. Many organisms take in nutrients and they all

¹⁰⁴ Thomas Aquinas, *Summa Theologiae* (Lander, WY: The Aquinas Institute, 2012): I.44.4

grow in various ways; acorns do so specifically for a *reason*. All natural substances are *internally* directed towards certain ends, and it is for this reason that final causality must be admitted in our explanation of substance.

Final causality, in itself, does not have a contemporary counterpart in the metaphysics of substance. The idea of a final cause comes from Aristotle and he identified four causes that serve as the “principal modes of explanation of any entity that we discover in our experience”.¹⁰⁵ The four causes are: (1) material, (2) formal, (3) efficient, and (4) final. The material and formal causes are *intrinsic* to a substance while the efficient and final causes are *extrinsic* given that they terminate in the effect. The material cause is that in a thing out of which it is made. The formal cause is that in a thing which makes it to be such a thing (i.e., such a *kind* of thing). The efficient cause is that which, by its actions, makes something to be. The final cause is that for the sake of which something is made or done.

As an approach to investigate material substance, the four causes are quite foreign to the modern reader since the Aristotelian approach in science was basically abandoned during the dawn of Empiricism. However, if our contemporary approach to material substance cannot admit of final causes, then perhaps we ought to revisit the Aristotelian approach to nature. An argument for the existence of final causality might look like this:

- (1) Every agent acts for some end.
 - a. Substances that lack agency also “act” for some end as they bring about effects.

¹⁰⁵ Norris Clarke, *The One and the Many* (South Bend, IN: University of Notre Dame Press, 2001): 209.

- (2) When an agent can act for a range of ends, there is no reason that the agent should pick one end over another.
 - a. In substances that lack agency, while the substance does not have the ability to “pick” one end over another, it is possible that any number of ends could be sought—and there is no reason one end ought to be preferable to another.
- (3) However, some determination must be made and some end must be sought.
 - a. In substances that lack agency, some end must be sought as action must be taken.
- (4) In our experience, substances have characteristic functions and bring about characteristic ends.
- (5) As efficient causality refers to the capacity to bring about some effect, so final causality refers to the determination that is made to bring about certain effects instead of others
 - a. In substances that lack agency, this determination to bring about certain effects is built into their very nature.
- (6) The internal directedness of a substance to its characteristic ends is an expression of its essence/nature in the context of efficient causality.
 - a. In other words, since the essence makes a substance to be a certain kind of thing, the characteristic effects that a substance brings about originate from its essence.

From this argument it is apparent that final causes, or *intrinsic finality*, as it is sometimes called, is not a *thing* additional to an essence. Rather, the finality/directedness of a substance is just an expression of the essence in the context of [a substance bringing about an effect].

As this terminology is foreign to us, one might wish to account for final causes in terms we are familiar with. However, I do not think that bundle theory or bare particularism can account for intrinsic finality because it necessitates an essence that is distinct from any properties. NT and SNT account for essence by pointing to the nuclear bundle of tropes in a substance. Bare particularism does not seem to be able to make any distinction between different kinds of properties so it cannot give us essential properties.

For these reasons, final causality is unique to hylemorphism and the A-T metaphysics of substance.

In conclusion, hylemorphism is more attractive than bundle theory and bare particularism for several reasons. First, hylemorphism allows for a distinction between essence and accidents. Second, hylemorphism can account for the phenomenon of substantial change. And third, hylemorphism can explain the natural tendencies and characteristic activities of substances via final causality. However, the theoretical differences that support the advantages of hylemorphism over contemporary accounts of substance also have price tags—making this theory untenable for some.

Concerns for a (Potential) Hylemorphist

At this point, one might opt for hylemorphism without considering the theoretical price tag. In chapter 7 of his book, Brower identifies several possible concerns for hylemorphism, but I want to focus on two. First, is the nature of prime matter. Second, the commitment to the existence of God.

Prime matter is inherently strange. It is non-individual “stuff” that is not a member of any kind, nor does prime matter have any nature. Prime matter is truly a unique kind of thing, since it is not really a thing at all! Many people might pass over hylemorphism simply because prime matter is too mysterious. But recall that Aquinas and Aristotle come to postulate prime matter only when considering the phenomenon of

substantial change. Prime matter is not knowable in any other way. In this sense, it is unavoidable for A-T. Denying substantial change is a dubious prospect and therefore the theoretical price tag associated with mysterious prime matter may not be of consequence for the hylemorphist. The notion of a bare particular is hardly less mysterious—arguably a bare particular is more mysterious since it satisfies the role of individuator. People interested in the metaphysics of substance are already invested in many “high-priced” theoretical items.

Concerning the commitment to the existence of God, if you recall the diagram of substance on page 37 (**figure 1**), A-T do not restrict their metaphysics of substance to material substance. Their metaphysics of substance comes from a consideration of being *qua* being. The fundamental distinction is between substance-accident: (1) substance is that which exists independently (*subsistence*), and (2) accidents *inhere* in substance and cannot exist independently. For A-T, either something exists in itself or it exists in another. Given that substance is that which subsists independently, A-T then distinguish between a *simple* substance and a *composite* substance. God is the only simple substance since there is nothing non-essential in God; God has no accidents. All other substances are *compositions* of [substance + accidents]. Hylemorphism is a part of substance metaphysics for A-T as it explains how [prime matter + substantial form] come together to compose material substance. Furthermore, in material substances that lack agency (e.g., plants and (at least some) animals), God is necessary to explain the internal directedness in those substances. The following argument can be added to my argument

for final causality from above (page 71) in order to show the relation between intrinsic finality and God:

- (7) As final causality is understood as that which *directs* the agent to such and such an end, so final causality requires a mind to determine, or guide, the efficient cause.
- (8) Since some substances lack agency, their directedness towards certain ends is predetermined in their essence/nature by God.
- (9) Therefore, the existence of God is required to explain the directedness/finality that is found in substances that lack agency.

Formally, God is the *distal* cause and the plant/animal is the *proximate* cause in the case of [a substance bringing about its characteristic effect/s]. While Aquinas has five distinct ways to prove the existence of God (*Summa Theologiae* I), I think that these considerations necessitate the existence of God for the hylemorphist. This may deter some from this theory of substance, but I think arguments for the existence of God are far more convincing than arguments for one theory of substance over another.

In this thesis, I have argued that hylemorphism and the metaphysics of substance formulated by A-T is a more attractive view than bundle theory and bare particularism. Now, when one enters into an historical conversation in metaphysics, it can be difficult to find something novel to say. While I have certainly cited some arguments from Brower, Feser, Oderberg, and others, I think that I have been able to contribute to the metaphysics of substance literature—if only in a small way. I hope to shift the approach of this debate to the teleological nature of substance. More must be written on the teleological nature of substance in order to establish a convincing need for an essence distinct from properties. Once this need has been established, we can refocus our energy on understanding how A-T metaphysics might be suited to explain the findings of

contemporary science. Furthermore, instead of trying to reformulate the metaphysics of A-T into contemporary terminology, we ought to readopt the traditional terminology with the hope that, in short period of time, it will be familiar to metaphysicians. Much of literature defending traditional hylemorphism aims to understand hylemorphism in terms of contemporary accounts of substance—our time would be better spent establishing a convincing need for an essence distinct from properties to explain the internal directedness of material substances.

In conclusion, hylemorphism is a complicated and foreign theory to contemporary theorists but it has several attractive features. First, it can make a clear distinction between essential and accidental properties. Second, hylemorphism can give an account of substantial change. Third, hylemorphism can account for the teleological nature of substance. For these reasons, hylemorphism is a more attractive theory of substance than any contemporary account.

CHAPTER V

CONCLUSION

In this thesis, I have defended traditional hylemorphism over contemporary accounts of substance. In the second chapter, I laid out two prominent contemporary accounts of substance, nuclear bundle theory and bare particularism. I primarily focused on the work of Peter Simons and Markku Keinanen in bundle theory and J. P Moreland and Timothy Pickavance in bare particularism. Nuclear bundle theory has advantages over bare particularism with respect to its ability to make the essential – accidental distinction among properties. Bare particularism has an advantage over nuclear bundle theory with respect to substance unity and the intuitive distinction between properties and their bearers. Both accounts fail to explain the phenomenon of substantial change.

In the third chapter, I used Aquinas to explicate traditional hylemorphism. The theory of hylemorphism holds that a substance is a composite of matter and form. The need for a composition comes from an analysis of change. Aquinas, following Aristotle, distinguishes between both accidental and substantial change. In accidental change, the subject, or substance survives the change. In substantial change, prime matter survives the change. More precisely, prime matter is the subject of substantial change and secondary matter, or the substance, is the subject of accidental change. While hylemorphism originates from the work of Aristotle and Aquinas, there are a number of

contemporary defenders. I briefly examine the work of David Oderberg, Edward Feser, and Anna Marmodoro.

In the fourth chapter, I explained why hylemorphism is preferable to nuclear bundle theory and bare particularism. With regards to nuclear bundle theory, hylemorphism does a much better job accounting for substance unity by postulating an essence distinct from its accidents. Furthermore, without an ultimate substratum for substance, bundle theory cannot account for substantial change. Concerning bare particularism, the inability to make the essential-accidental distinction makes hylemorphism the more attractive theory. Also, hylemorphism has a distinct advantage over both contemporary accounts concerning the teleological nature of substance.

While there are theoretical price tags associated with prime matter and other tenets of hylemorphism, the explanatory power of this theory makes hylemorphism the most attractive theory of substance. The phenomenon of substantial change must be explained; no other contemporary account can rival the metaphysics of change upon which hylemorphism is built.

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