

# Structural Integrity Uncompromised: On Behalf of the Structural Hylomorphist

[Penultimate Copy. Please Cite Published Version.]

Jeremy W. Skrzypek

Ohio Dominican University

**Abstract:** One of the main targets of *Material Objects in Confucian and Aristotelian Metaphysics* is Structural Hylomorphism, a recent variant of hylomorphism espoused by authors such as Kit Fine, William Jaworski, and Kathrin Koslicki. Fr. Rooney raises at least three, and perhaps as many as five, different objections against structural hylomorphism in the book. My aim in this essay is twofold. First, I try to draw out some of the implicit premises and assumptions found within several of these objections in order to make them more perspicuous to those readers wishing to understand them better. Second, I offer a variety of replies on behalf of the structural hylomorphist to what I see as the three main objections against that sort of view. For each of the objections that I cover, I argue either that it raises no serious concerns for structural hylomorphism, or that there are ways that structural hylomorphists might navigate around these objections which Rooney has not considered, or that the main thrust of the objection targets Rooney's preferred hylomorphic theory of material objects just as much as it targets structural hylomorphism.

**Keywords:** Hylomorphism; Structure; Form; Substance; Artifact

## I. Introduction

In *Material Objects in Confucian and Aristotelian Metaphysics* (Rooney 2022), Fr. James Dominic Rooney defends two key claims. The first is that any consistent, coherent, and informative restricted theory of composition must be hylomorphic in at least this sense: there will be something within this theory, and within every material object, that plays the role of substantial form. The second is that any theory of material objects that grants that composite material objects, that is to say, substances, can have other composite material objects, that is to say, other substances, as parts will fail to provide a consistent, coherent, and informative restricted theory of composition. What Rooney is arguing here is not just that hylomorphism is a plausible theory of material objects, or even that a hylomorphic theory of material objects is more plausible than any other leading theory of material objects currently on offer. He is arguing that, at the end of the day, there are no serious competitors to hylomorphism. And his aim is to demonstrate not just that something like hylomorphism must be true, but that some very specific

hylomorphic theory of material objects, one according to which it is impossible for any substance to possess any other substances as parts, is the one and only theory of the material world that could possibly be right.

Rooney's conclusions are bold and sweeping. I myself am sympathetic to some of these conclusions. But I am not entirely persuaded by Rooney's arguments for them. One of the main targets of Rooney's book is Structural Hylomorphism, a recent variant of hylomorphism espoused by authors such as Kit Fine, William Jaworski, and Kathrin Koslicki.<sup>1</sup> Rooney raises at least three, and perhaps as many as five, different objections against structural hylomorphism in the book. Each of these objections is detailed and complex, involving multiple twists and turns and a great number of moving pieces. My aim in this essay, then, is twofold. First, I will try to draw out some of the implicit premises and assumptions found within several of these objections in order to make them more perspicuous to those readers wishing to understand them better. Second, I will offer a variety of replies on behalf of the structural hylomorphist to what I see as the three main objections against that sort of view. For each of the objections that I will cover, I will argue that it raises no serious concerns for structural hylomorphism, or that there are ways that structural hylomorphists might navigate around these objections which Rooney has not considered, or that the main thrust of the objection targets Rooney's preferred hylomorphic theory of material objects just as much as it targets structural hylomorphism.

## **II. Defining Our Terms**

But first we must define our terms. And we will begin, as Rooney does, with the Special Composition Question. The Special Composition Question asks: when or under what circumstances do some material objects compose some further composite material object which

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<sup>1</sup> For some other recent critiques of structural hylomorphism see (Rea 2011), (Marmodoro 2013), (Oderberg 2014), (Koons 2014), (Skrzypek 2017), and (Renz 2018).

includes those material objects among its proper parts?<sup>2</sup> As Rooney defines it (Rooney 2022: 33), a restricted theory of material composition is any theory which aims to provide an answer to the special composition question and which preserves two further claims:

- 1. There are material objects with parts.*
- 2. Any two material things do not necessarily compose a whole.*

The first of these claims signals a rejection of mereological nihilism, the view according to which there are no composite material objects, that material objects never compose some further composite material object. The second claim signals a rejection of mereological universalism, the view according to which every possible set of material objects composes some further composite material object, regardless of their proximity in time or space, or any relations they might bear to one another, or any particular features they might possess at any moment. Together these two claims constitute a minimal set of conditions or criteria that any theory of material composition must preserve or espouse in order to count as a restricted theory. And a “genuine material object” or “substance” is any material objects that minimally satisfies both of these conditions, which is to say, any material object which has parts but whose parts are such that they do not necessarily compose that object (Rooney 2022: 34).<sup>3</sup>

Hylomorphism is the theory that material objects are composed of both matter and form. Structural hylomorphism is a recent variant of hylomorphism which says that the form of a material object is best understood as some kind of complex, polyadic relation or structure realized in its material parts. Its main proponents include Kit Fine, William Jaworski, and

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<sup>2</sup> Peter van Inwagen first introduced the Special Composition Question in his (1990: 20). It is to be distinguished from what he calls the “General Composition Question”, which asks, more generally, “What is Composition?” (see his 1990: 39) The Special Composition Question has since become the key guiding question for debates concerning material composition.

<sup>3</sup> As we will see, Rooney later goes on to argue that any genuine material object or substance must also be such that none of its material parts are themselves genuine material objects or substances. Thus, on his account, some restricted theories of material composition that satisfy both of the two conditions outlined here will nonetheless fail to preserve the existence of genuine material objects or substances.

Kathrin Koslicki.<sup>4</sup> Structural hylomorphists offer the following, restricted theory of material composition: Some material objects compose some further composite material object just in case those material objects are structured in the right way (Rooney 2022: 34). Structural hylomorphists are committed to something that Rooney calls the “Substance-Part Principle” (Rooney 2022: 34-39).<sup>5</sup> There are several different ways of formulating this principle. On the side of the whole, we can formulate it as follows:

*It is possible for substances to be composed of other substances.*

*It is possible for some composite material object to have as a proper part some other composite material object.*

Alternatively, on the side of the parts, we can formulate it as follows:

*It is possible for some substance to be the proper part of some other substance.*

*It is possible for some composite material object to be the proper part of some other composite material object.*

And, understood diachronically, we can formulate the substance-part principle like this:

*It is possible for some substance to come to be a proper part of some other substance without ceasing to be a substance and without ceasing to be the very same substance that it is.*

*It is possible for some substance to come to be a proper part of some other substance without undergoing any change in its essential kind.*

Having defined our basic terms, let’s now take a look at Rooney’s arguments.

### **III. Regressing Infinitely**

Rooney argues that the substance-part principle poses problems for structural hylomorphism. Indeed, one of his main conclusions is that any theory of material composition which accepts something like the substance-part principle will face severe difficulties. At several

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<sup>4</sup> See, for example, (Fine 1999), (Jaworski 2016), (Koslicki 2008, 2018). Another leading structural hylomorphist whose work Rooney does not explore in detail in the book is Mark Johnston (see, for example, (Johnston 2006)).

<sup>5</sup> The various formulations that follow are drawn from this part of the text.

points, Rooney accuses structural hylomorphism of being “inconsistent” or “incoherent” due to its commitment to the substance-parts principle. It is not always clear how or in what sense structural hylomorphism is supposed to be inconsistent or incoherent, but I think I’ve tracked down at least three of the concerns that he has in mind.

In what sense is Structural Hylomorphism inconsistent? Rooney argues that structural hylomorphism fails to preserve the two conditions or criteria outlined above which any theory of material composition must meet in order to count as a restricted theory of composition while at the same time claiming to provide just such a theory (Rooney 2022: 40, 43-45, 46). How so? In brief, Rooney argues at several points that structural hylomorphists end up having to say that the parts of composite material objects necessarily compose those objects in order to avoid some other inconsistency or incoherence, which violates condition two. We’ll see some examples of this below.

In what sense is structural hylomorphism incoherent? In several places, Rooney argues that structural hylomorphism, when pressed, leads to either an infinite regress or vicious circularity. In what follows, I will concentrate primarily on these two charges, though there appears to be at least one other kind of incoherence that Rooney attributes to structural hylomorphism that I will explore along the way.

What sort of infinite regress is structural hylomorphism subject to? This is a bit difficult to track down in the text, but the sort of infinite regress that Rooney has in mind appears to be a version of the classic regress problem for material composition outlined by Aristotle in Book VII, Chapter 17 of his *Metaphysics* (Aristotle, Ross 1984:1643-1644).<sup>6</sup> Here is one way of formulating that regress: In order for some parts to come together to compose some whole, there must be some further thing, some other object, element, or principle, that brings those parts

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<sup>6</sup> This is Aristotle’s famous syllable argument for hylomorphism.

together to make them one. Otherwise, those parts would simply compose that whole all on their own, which is to say, necessarily. And that's mereological universalism. If this further object, element, or principle is some additional part within the whole, then there must be, in turn, some further object, element, or principle that brings it together with the other parts. And so on.

How does one solve this infinite regress while also avoiding mereological universalism? One way of doing so is to say that while there is some further element, object, or principle that brings the parts together to compose the whole, this further element, object, or principle is not an additional part of the whole, and so does not require some further element, object, or principle to bring it together with the other parts.<sup>7</sup> Another way of solving this infinite regress while also avoiding mereological universalism is to say that this further element, object, or principle is an additional part within the whole, but it is a part of a different sort, and so does not require some further element, object, or principle to bring it together with the other parts in the same way that each additional part of the same sort does.<sup>8</sup>

But it is not clear to me that either one of these proposals on its own successfully solves the infinite regress. And here's why. Regardless of whether our further element, object, or principle turns out to be a part of the very same sort as the others, or whether it turns out to be any kind of part at all, we still need some sort of account of the relationship between the other parts and this further element, object, or principle. And if that relationship is spelled out in terms of the presence of some further element, object, or principle, then we once again face the same sort of infinite regress. It seems that the only way to avoid infinite regress is to say that this further element, object, or principle is *intrinsically correlative* with the others: its relationship to

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<sup>7</sup> Proponents of this sort of strategy include Johnston (Johnston 2006: 652-653) and Marmodoro (Marmodoro, 2013).

<sup>8</sup> Koslicki is a proponent of this sort of strategy (Koslicki, 2008: 108-111). See also (Rooney, 2022: 54) for discussion.

the other parts is built right into its nature. Indeed, it must be *essential* to that further element, object, or principle that it be related to those parts in the relevant way. For, if the relationship between that further element, object, or principle, were a contingent one, then whenever it does hold we would need some further explanation as to why it does so. And we are faced, once again, with the threat of infinite regress.

This is, in fact, the solution to the regress that Rooney will later offer. On the sort ofhylomorphic theory of material objects Rooney prefers, the further object, element, or principle within a thing that brings together its other parts is the object's substantial form, which is a part of the larger whole, but not the same sort of part as the material parts. It is instead a metaphysical part, one that is intrinsically and essentially correlative: it is the actualization of the potency found within the object's matter (Rooney 2022: Chapter Three).

Rooney argues that structuralhylomorphists face something like the infinite regress outline above (Rooney 2022: 43-44, 46, 53, 56, 60). According to structuralhylomorphism, the parts of a composite material object do not compose that object necessarily, but only when those parts are structured in the relevant way. To put it another way, the other parts do not compose the relevant object all on their own, but rather, those parts together with the object's structure do so. Now, Koslicki sometimes suggests that the structure of an object might itself be a certain sort of object, and so the same sort of thing as the other parts (Koslicki 2008: 252). But even if that turns out not to be the case, it is clear that, on her account, the structure of an object is a part of the whole in the same way that the other parts are (Koslicki 2008: 181). As Rooney points out, this gets her into trouble. If the structure of an object is itself a certain sort of object, or at least a part of the whole in the same way that the other parts are, then, if those other parts need something to bring them together before they can compose the object in question, then it seems those other

parts and the object's structure will need something to bring them together before they can compose the object in question. And then we are off to the races. If Koslicki were to block the regress by insisting that there is not some further object, element, or principle that brings together the other parts with the object's structure, but rather the other parts of the object and the object's structure compose that object all on their own, this would be to say that, together, all of the parts of a composite material object (which include its material parts and its structure) necessarily compose that object. And this violates the second condition for restricted theories of material composition outlined above.

I think that there is an interesting puzzle here, and I think that Rooney's Thomistic solution does the trick. But I have some lingering concerns about the puzzle itself and about what sort of solution is required. To begin, why think that there needs to be some further object, element, or principle within an object to explain why the parts compose the whole? Earlier we saw that simply adding another object, element, or principle doesn't by itself solve the problem. That object, element, or principle needs to be intrinsically and essentially correlative with those other parts. So why can't we say that those other parts themselves possess correlative features or relations which allow them to come together to compose some further whole? Rooney's worry is that if the parts compose the whole all on their own, then they must do so necessarily, and we thus have a version of mereological universalism. But perhaps it is a contingent fact that those parts possess the relevant correlative features or bear the relevant correlative relations. Or, perhaps it is essential to those objects that they possess the relevant correlative features or bear the relevant correlative relations, but it is a contingent fact that those correlative features or relations are in the correct circumstances to be able to link up (so perhaps there also needs to be spatial and temporal proximity between the parts, or perhaps it also requires the presence or

absence of certain other objects or certain other contingent features in other objects, or perhaps it requires that certain laws of nature or initial conditions hold in the relevant universe).

In short, if what is really solving the problem is the intrinsic correlativity of the parts and the further object, element, or principle by which they are unified, why can't we transfer that intrinsic correlativity to the parts themselves? The sort of picture I have in mind is this. Perhaps the parts of material objects are like Lego bricks or Lincoln logs or cord adapters or two-sided tape. We have plenty of experience with interlocking or intersecting material objects, which are capable of coming together to compose larger wholes simply because of their intrinsic correlative features. We don't need some further Lego brick to connect any two Lego bricks. If the Lego bricks are of the right sort, and related to one another in the right way, and the relevant laws of nature hold, then they have within themselves all they need.

My second concern is this. If all we need to solve the relevant regress is to introduce some object, element, or principle within the whole that is intrinsically and essentially correlative with the other parts, then why can't structural hylomorphists characterize structures in just that way? Why can't the structural hylomorphist say that the structure of an object is intrinsically and essentially correlative with the other parts of that object? The problem can't just be that they regard the structure as some further part of the object, because Rooney himself admits that substantial form is a part of the object, albeit of a different sort (Rooney 2022: 16, 64, 92, 162). Is there some principled reason why the structural hylomorphist can't make the same move that Rooney makes with respect to substantial form?<sup>9</sup>

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<sup>9</sup> In order to make this work, structures may need to be both *particular*, each material object having its own, and *localized*, present here at this location and not elsewhere. The structure and the parts of a composite material object will need to be not only intrinsically and essentially correlative with one another, they must also be in close proximity with one another in time and space. But this is something that the structural hylomorphists targeted by Rooney already accept.

In summary, when Rooney accuses structural hylomorphists of falling into incoherence, one of the things that he means is that they are subject to a version of the classic Aristotelian regress for theories of material composition. But as I've argued here it seems that there are some plausible solutions to this regress available to the structural hylomorphist. Indeed, one of the plausible solutions available to them is just a version of the solution that Rooney offers later in the book. As a result, I'm not convinced that Rooney has successfully shown that the substance-parts principle leads structural hylomorphism down the path to incoherence.

#### **IV. Inheriting Problematically**

But this is not the only kind of incoherence that Rooney attributes to structural hylomorphism. There is another that we might call the "Problem of Inheritance" (Rooney 2022: 57-60, 125-126, and 159). Here's how that problem goes, according to my understanding of it: If what makes something a member of a certain kind is that it possesses a certain kind-making structure among its proper parts, then composite material wholes will belong to several, incompatible kinds simultaneously. So, for example, a water molecule is composed of two hydrogen atoms, an oxygen atom, and a certain type of water-making structure. Each of the hydrogen atoms of which the water is composed is composed of a proton, an electron, and a hydrogen-making structure. Assume that a water molecule and the hydrogen atom of which it is composed are both composite material objects. Presumably, this means that there is some common criterion that they both meet which makes them such. And, presumably, this means that the parthood relation that the proton, the neutron, and the hydrogen-making structure bear to the hydrogen atom is the same sort of parthood relation that the two hydrogen atoms, the oxygen atom, and the water-making structure bear to the water molecule. And, presumably, this same parthood relation is a transitive relation. Why presume this? Because parthood is standardly

regarded as a transitive relation. If x is a part of y and y is a part of z, then x is a part of z. The cases in which this transitivity fails are those in which there are multiple senses of parthood involved. So, for example, my hand is a part of me, and I am a part of this conversation, but it doesn't follow that my hand is a part of this conversation, because the sense of part in the first case is importantly different than the sense of part in the second.

Now, if we assume all of this, then we get a potential problem for structural hylomorphism. The water molecule is a water molecule because of the water-making structure that it possesses as a proper part. But the water molecule is also a hydrogen atom because of the hydrogen-making structure it possesses by transitivity: the hydrogen-making structure is a proper part of the hydrogen which is a proper part of the water. And so, it follows that the water molecule is both a water molecule and a hydrogen atom. But nothing can be both a water molecule and a hydrogen atom. Even worse, the relevant structures are supposed to be essential to those material objects of which they are proper parts. It is essential to the water molecule that it possesses the relevant water-making structure, which is to say that the water is essentially water. By transitivity, however, it will also be essential to the water molecule that it possesses the relevant hydrogen-making structure, which is to say that the water is essentially hydrogen. So not only is the water both a water molecule and a hydrogen atom, it is *essentially* both a water molecule and a hydrogen atom.

How might the structural hylomorphist avoid this problem? He or she could deny the transitivity of parthood in this and other similar cases. But, as explained above, it seems that the transitivity of parthood only fails in those cases in which there are several different parthood relations involved. And to say that there are several different parthood relations involved is to say that the hydrogen atom and the water molecule are not composite wholes in the very same

way. The result is that there are multiple species of composite material objects, and multiple species of material composition.

A second option for the structural hylomorphist is to deny that possessing a kind-making structure among its proper parts is sufficient to make a thing a member of the relevant kind. He or she could say that a thing must not only possess a kind-making structure among its proper parts, that kind-making structure must also figure into the essence of the thing. Alternatively, he or she could say that a thing must not only possess a kind-making structure among its proper parts, it must possess the relevant kind-making structure among its most immediate proper parts. Or, he or she could say that the relevant kind-making structure must be the highest kind-making structure found within the mereological structure of the larger whole. All of these strategies are ways of ensuring that while the larger composite whole does inherit certain other kind-making structures from its parts, none of these kind-making structures are the kind-making structure that makes the whole the kind of object that it is.

Finally, in response to the problem of inheritance, the structural hylomorphist could bite the bullet and admit that the water molecule is both essentially a water molecule and essentially a hydrogen atom. He or she could then say something like this: the water molecule is a hydrogen atom, but it is not *merely* a hydrogen atom. It is something that possesses all of the properties of a hydrogen atom and more. So, by comparison, a square is a rectangle, but it is not *merely* a rectangle. It is something that possesses all of the properties of a rectangle and more. Or the structural hylomorphist can say that the water molecule is a hydrogen atom, but that it is not *entirely* a hydrogen atom. It is *partly* a hydrogen atom, because while it possesses the essence of a hydrogen atom, it also inherits other essences from its other parts and has its own essence in addition to the essences of each of its parts.

There are, then, several ways of resolving the problem of inheritance available to the structural hylomorphist. All of them seem plausible to me. Indeed, I struggle to see why Rooney thinks that it is so implausible for the structural hylomorphist to admit the existence of multiple species of composite material objects, and multiple species of material composition. Is it simply inelegant? Is there some deeper incoherence lurking here? And, if so, why aren't the other options plausible ways out?

### **V. Circling Viciously**

A third kind of incoherence that Rooney attributes to structural hylomorphism pertains to Koslicki's account in particular. Rooney accuses Koslicki's version of structural hylomorphism of falling into vicious circularity (Rooney 2022: 40, 54, 58, 61, 63). While Rooney never clearly identifies the vicious circle he has in mind, I think it is meant to go something like this: Something belongs to a certain natural kind if and only if it possesses the relevant kind-making structure and that kind-making structure figures into the essence of that thing. Recall that this second condition is meant to block or avoid the problem of inheritance outlined above. But something possesses the relevant kind-making structure and that kind-making structure figures into the essence of that thing if and only if the thing belongs to a certain natural kind. So, the natural kinds to which objects belong are identified and specified with reference to particular kind-making structures and particular essences found within certain material objects. But kind-making structures and essences are identified and specified with reference to natural kinds. This appears to be viciously circular. I think that this is the sort of vicious circularity that Rooney has in mind, though I must admit I had a hard time pinning it down. If this isn't it, then I don't know where the circle is supposed to be.

Now, if I am right in understanding the problem of circularity this way, then it seems to me that there is a plausible solution available to the structural hylomorphist. He or she could say that natural kinds and forms and essences are prior to one another in different ways. He or she could say that natural kinds are *epistemically* prior, whereas forms and essences are *metaphysically* prior. Here's how that story might go: To determine whether something has a kind-making structure and whether that kind-making structure belongs to the essence of a thing we first determine whether the thing in question belongs to one of the relevant natural kinds (which are determined, I think, by their indispensability in our best scientific theories). But what *makes* that object a member of the relevant kind is that it possesses the relevant kind-making structure and the fact that that kind-making structure belongs to its essence.

Two things can both be prior to each other as long as they are prior in different senses. Indeed, this is a common strategy used by hylomorphists in explaining the relationship between form, matter, and the substance that they jointly compose. Form is prior to matter in one way and matter is prior to form in another. Form and matter are prior to the composite substance of which they are metaphysical parts in one way, and the composite substance is prior to the form of matter of which it is composed in another way. If this is a permissible move in that context, it should be a permissible move here.

## **VI. A World of Artifacts**

Having identified and responded to three major objections to structural hylomorphism found within Rooney's book, let me conclude by offering a big-picture reply to one of his main conclusions. The substance parts principle says that it is possible for substances to have other substances as parts, or, alternatively, that it is possible for some substance to be a proper part of some other substance. This is something that Rooney insists that we must deny, lest we fall into

some kind of inconsistency or incoherence. No substance can have any other substance among its proper parts. And no substance can be the proper part of any other substance. But what is the real significance of this claim? What is it to be a substance? When we say that something is a substance, what are we affirming of that thing? When we deny that some material object is a substance, what are we denying? What can still be affirmed of a thing even if it is not a substance and what cannot be affirmed of it because it is not a substance?

At several places, Rooney himself admits that some material objects, such as the parts of material substances, exist, and are structured, which is to say, they possess or exemplify certain structural features among their own parts, but are nonetheless not substances. On page 63, for example, he tell us: “rejecting the possibility of substance-parts does not require rejecting that a structured whole can have parts that are themselves structured. Nobody need reject the obvious fact that my hand, despite being a part of me, has its fingers as parts” (Rooney 2022: 63; see also 35-36 and 42). So, what is it that cannot be affirmed of these types of material objects that can be affirmed of substances? Rooney offers a few clues scattered across the book. One of the key features of substances is that they are property-bearers. They are what bear properties in the strict and primary sense. The parts of substances, which are not themselves substances, can bear properties, but only in a derivative, secondary sense. As Rooney explains, “when my hand is white, then I am white with respect to my hand. My hand is not a property-bearer in its own right, but bears properties only in virtue of being a part of me” (Rooney 2022: 78). Another key feature is that substances are what exist in the strict and primary sense. The forms and parts of substances, which are not themselves substances, can be said to exist, but only in a derivative, secondary sense (Rooney 2022: 78). Lastly, substances possess, and non-substances do not possess, emergent essential properties: “a thing is a substance when it has powers and properties

that are essential to it, but are not a sum of the powers and properties essential to those things that could potentially come to compose it” (Rooney 2022: 81).

Putting all of this together, it seems that, on Rooney’s account, material objects that are not substances in their own right, such as the material parts of substances, cannot be said to bear forms or properties or exist in the strict and primary sense, nor can they be said to possess any emergent properties that are also essential to them. They do, however, exist, and can be said to possess their own parts, and can be said to possess or exhibit their own structural features. They can be said to bear their own forms and properties, albeit in a secondary, derivative sense. Some of them might even possess their own emergent properties, properties which are not merely sums of the powers and properties of their parts, so long as those emergent properties are not essential to them.

On this account, substances are the fundamental building blocks of the material world. They are the pushers and pullers, the movers and shakers. They are the primary property bearers, the primary causal agents, and the primary causal patients of our world. Without the substances, nothing else would exist, and nothing would ever happen. Importantly, however, material substances do not exhaust the material world. There are plenty of other material objects among us. Most notably there are the proper parts of substances, the existence of which Rooney himself is keen to preserve. But there is also another category of material objects that Rooney brushes over much too quickly: material artifacts.<sup>10</sup>

A material artifact is any material object which includes within its composition one or more material substances and one or more accidental forms. It is standard to recognize two different types of material artifacts: single substance artifacts and multi-substance artifacts.

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<sup>10</sup> For some helpful discussions of material artifacts in the metaphysics of Thomas Aquinas, see (Brower 2014: 210-216), (Brown 2005: 98-103), and (Skrzypek 2023). Rooney cites Brown’s book approvingly, but doesn’t seem to see the sorts of problems that admitting the existence of material artifacts will introduce for his theory.

Single substance artifacts are those that include within their composition a single substance and a single accidental form. A bronze statue, for example, includes within its composition some bronze and some particular shape. Multi-substance artifacts are those that include within their composition two or more substances and one or more accidental forms. An axe, for example, includes within its composition some iron, some wood, and the particular bond or relation that holds between them (or set of bonds or relations if it turns out to be more than one).

Material artifacts are not substances; they are composed of substances. But they are, nonetheless, genuine material objects. They exist, they possess their own parts, they exhibit certain structural relations between those parts, they possess certain properties and powers, perhaps even some that are emergent, and, perhaps most importantly, they are everywhere. Over the course of a single day, I see, touch, taste, hear, smell, design, create, modify, destroy, make use of, stumble over, and rely upon thousands of different material artifacts. If I were to deny their existence, I would be denying the existence of the vast majority of the objects of my experience.

Now, if there are artifacts, then there exist some composite material objects which possess other composite material objects among their proper parts. And this would seem to straightforwardly violate one of the fundamental tenets of Rooney's hylomorphic worldview. And if there are not artifacts, then Rooney's theory turns out to be much more nihilistic than it first appears: there are no tables, chairs, hammers, vases, plates, napkins, computers, buildings, planets, families, armies, cities, nations, or sports teams. In short, many of the things that we would ordinarily take to exist do not in fact exist.<sup>11</sup>

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<sup>11</sup> There is a third option available. Rooney could insist that at least some of the objects listed here are not in fact artifacts, but material substances, which is to say, genuine material objects which do not have any other material substances as parts. But I don't think he wants to say this. It would mean that things like tables, chairs, hammers, and vases are not composed of actual material substances like wood, metal, and stone and things like families, armies, cities, nations, or sports teams are not composed of actual human persons.

Perhaps what Rooney will want to say is that these things do exist, but not as “genuine material objects”. They do not exist in the strict and primary sense, they do not possess any of their own properties in the strict and primary sense, they do not act and are not acted upon in the strict and primary sense. But how much does that matter? Whatever mode or degree of existence we are willing to grant to artifacts, that same mode or degree of existence can be granted to complex hylomorphic substances, that is to say, substances which have other substances as parts. In other words, as long as we are willing to grant the existence of material artifacts, then this gives structural hylomorphists a way out. It could be that many of the objects which Rooney regards as substances are actually material artifacts and so need not obey the substance parts principle. Indeed, it could be that structural hylomorphism just is a theory of composite material objects as artifacts. Perhaps the only substances that exist are much, much smaller and everything else in our world is a material artifact.

Even more than that, however we tell the story of the relationship between the material parts, the unifying form, and the whole that they compose in any material artifact, the structural hylomorphist can simply tell that same story, or some version of it, about the other objects of our experience. If there is a way of spelling out a theory of material composition for material artifacts that avoids the threats of inconsistency and incoherence outlined in Rooney’s book, then structural hylomorphists can simply offer that theory of material composition. And if there is no way of spelling out a theory of material composition for material artifacts that avoids inconsistency or incoherence, then it looks like Rooney is forced to accept something very close to mereological nihilism after all. In short, to stipulate that substances cannot have other substances as parts could turn out merely to stipulate that many of the objects of our experience turn out not to be substances after all, but material artifacts. And it is unclear to me why that isn’t

a feasible route for the structural hylomorphist to take. On the structural hylomorphist picture of the world, the world might look very different than it does on the Thomistic picture. What appear to be substances are really just complex material artifacts. But maybe that's the right picture. Maybe the real pushers and pullers, movers and shakers of the world are beneath our gaze, much smaller than we initially thought. While I am sympathetic to many of the conclusions in Rooney's difficult but rewarding book, he has not yet convinced me that this alternative picture couldn't possibly be the right one.

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