

RESEARCH

The Hard Question for Hylomorphism

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The view that ordinary objects are composites of form and matter (“hylomorphism”) can be contrasted with the more common view that ordinary objects are composed of only material parts (“matter only”). On a matter-only view the hard question is modal: which modal profile does that (statue-shaped) object have? Does it have the modal profile of a statue, a lump, a mere aggregate? On a hylomorphic view the hard question is ontological: which objects exist? Does a statue (matter-m + statue-form), a lump (matter-m + lump-form), and/or a mere aggregate (matter-m + mere aggregate-form) exist? I defend a novel answer to the hard question for hylomorphism. In particular, I argue that which ordinary objects exist depends, in part, on how subjects respond to the matter they encounter. I argue that, with regard to grounding the existence and modal properties of ordinary objects, response-dependent hylomorphism is superior to both matter only views and to non-response-dependent versions of hylomorphism.

Keywords: hylomorphism; ordinary objects; matter; form; metaphysics

Introduction

The Aristotelian view that ordinary objects are composites of form and matter (“hylomorphism”) has seen a resurgence of popularity, e.g. Fine (1999, 2003, 2008), Johnston (2002, 2006), and Koslicki (2006, 2008).¹ Prima facie, a hylomorphic view of ordinary objects has an advantage over matter-only views of ordinary objects, such as e.g. Jubien (2001), Quine (1960), or Sider (2001), when it comes to accounting for the modal properties of ordinary objects.² By literally building form into what it is to be the object, hylomorphists have a starting point for modality which matter-only adherents do not. Given hylomorphism, objects are inseparable from (because constituted by) their form — and, by extension, from the kind/modal profile/modal properties which follow from their having the form they do.³ Prima facie, for the hylomorphist, accounting for an ordinary object’s modal properties is easy in a way it isn’t for adherents of matter-only views.

One might worry, however, that this prima facie ease is an illusion. On a matter-only view the hard question is modal: which modal profile does that (statue-shaped) object have? Does it have the modal profile of a statue, a lump, a mere aggregate? On a hylomorphic view the hard question is ontological: which objects exist? Does a statue (matter-m + statue-form), a lump (matter-m + lump-form), and/or a mere aggregate (matter-m + mere aggregate-form) exist? Koslicki appeals to science: our best science tells us which kinds of objects exist and philosophy defers (2008, 200–234). Fine appeals to a principle of modal plenitude: every form that’s eligible to combine with matter m does so: a statue, a lump, and a mere aggregate all coincide (1999). Johnston appeals to genuine parts and principles of unity: every combination of genuine parts which is bound by a principle of unity is an object (2006, 658).

My aim in this paper is to defend a novel answer to the hard question for hylomorphism. In section I, I discuss the material aspect of ordinary objects. In section II, I discuss the formal aspect of ordinary objects.

¹ See, also, Fine (1992, 2005, 2006, 2007, 2015), Johnston (1992, 1997), and Koslicki (2007, 2012, 2014).

² Although see Sidelle (2014) for a denial of this claim.

³ Koslicki (2008), for instance, notes that: “the presence of formal components within a mereologically complex object contributes in some way to explaining the differences in the modal profile” (254). Whilst Johnston (2006) notes, “Hylomorphism was stipulated to be the thesis that the real definition of each complex item is to be given in terms of its parts (“matter”) and principle of unity (“form”), where to give the real definition of an item is to state its essence” (676).

In section III, I defend response-dependent hylomorphism. I argue that which forms combine with which bits of matter — and, thus, which ordinary objects exist — depends not only on the intrinsic properties and situation of the matter and form, but, also, on how subjects respond to relevant bits of matter. In section IV, I argue that a central advantage of response-dependent hylomorphism over non-response-dependent hylomorphism is the former allows us to tell a more satisfactory modal grounding story.

I. The Material Part of Ordinary Objects

One strategy of the hylomorphist who wishes to avoid primitive modality is to separate the modal aspect of ordinary objects from the empirical aspect of ordinary objects and then to tell a separate grounding story for each. I'll follow this strategy. In particular, I'll argue that ordinary objects are composites of a material part which lacks (non-trivial) *de re* modality and a formal part which gives rise to the (non-trivial) *de re* modal properties the ordinary object has.⁴

An object's *de re* modal properties are the properties it has which are prefixed by necessity or possibility, e.g. *being necessarily self-identical*, *being necessarily mammalian*, *being possibly red*, *being possibly taller than 6'*.⁵ There is no universally accepted demarcation between trivial modal properties and non-trivial modal properties. In general, however, modal properties which rely on the specific nature of the object which has them and which are had by some objects and lacked by others (e.g. *being necessarily mammalian*, *having part p necessarily*, *being possibly taller than 6'*, *being possibly in France*) tend to be considered non-trivial. Whereas modal properties which do not rely on the specific nature of the object which has them and which are had by all objects (e.g. *being necessarily mammalian or non-mammalian*, *being necessarily self-identical*, *being possibly red if actually red*) tend to be considered trivial. This general distinction isn't perfect.⁶ However, it's sufficient for the purpose at hand.

Call entities which lack (non-trivial) modal properties "n-entities". The claim that there are n-entities is controversial.⁷ There are some who, tacitly or overtly, defend their existence, e.g. Quine, Gibbard, Lewis, and Sidelle.⁸ There are many others who find n-entities unpalatable. The intuitive reason to endorse n-entities is the belief that some entities exist coupled with the belief that the world doesn't have enough modal structure

⁴ I'll speak of "(non-trivial) *de re* necessary properties" rather than of Finean essences. Although I'm ultimately sympathetic to Fine's approach, the question of whether the modal or definitional conception of necessity/essence is correct is orthogonal to the project at hand. What matters for the project at hand is the extension of the necessary/essential and the extension of the (non-trivial) *de re* necessary on the modal conception matches the extension of the essential on Fine's definitional conception. In other words, the set of properties denoted by my notion of the (non-trivial) *de re* necessary is exactly the same as the set of properties denoted by Fine's notion of essence.

⁵ I focus here on the paradigmatic modal notions of necessity and possibility. What I say can, *mutatis mutandis*, be extended to other modal notions which feature in non-trivial *de re* claims.

⁶ Suppose, for instance, that object *o* is (identical to) Jenn. Then, given an actual property of *o*, *being Jenn*, and a trivial modal property of *o*, *being necessarily self-identical*, we seem to be able to derive *being necessarily identical to Jenn*. Likewise, suppose that object *o* is taller than 6'. Then, given an actual property of *o*, *being taller than 6'*, and a trivial modal property of *o*, *being possibly taller than 6' if actually taller than 6'*, we seem to be able to derive *being possibly taller than 6'*. A puzzle arises because, according to the criteria given above, *being necessarily identical to Jenn* and *being possibly taller than 6'* are non-trivial modal properties, but intuitively a modal property which can be derived from an actual property and a non-trivial modal property should, itself, be a non-trivial modal property. See Fine (1994), Forbes (1986), Mackie (2006), and Paul (2006) for further discussion of the distinction between trivial and non-trivial *de re* modality. Fine (1994) argues persuasively that the trivial/non-trivial distinction presupposes the notion of essence (i.e. the non-trivial necessary properties just are the essential properties) and, thus, that our ultimate analysis of necessity should be definitional rather than modal.

⁷ Some, for instance, worry that n-entities are metaphysically impossible. Goswick (2015) dispels this worry.

⁸ Quine famously rejected the "metaphysical jungle of Aristotelian essentialism" (1953, 174) and the *de re* modality he took to lead to it. This didn't prevent him from endorsing a perfectly coherent account of physical objects as "the content, however heterogeneous, of some portion of spacetime, however disconnected and gerrymandered" (1960, 171). These physical objects are n-entities. Gibbard argues that, although individual concepts have *de re* modal properties, physical objects do not: "Consider the thing I made and then broke, which is both a statue and a lump. There is no apparent way of saying that [it could have been F] is true or false of that thing. It is true of it qua statue but not qua piece of clay. ... Concrete things will have no modal properties: there will, that is, be no such thing as *de re* modality for concrete things" (106–111). Gibbard's concrete things are n-entities. L.A. Paul (2006) attributes a belief in n-objects to David Lewis. She notes, "What I take to be the core of an object — its fusion of basic nonmodal properties — is what Lewis takes to *be* the object" (2006, 355). Lewis' own writings seem to support Paul's interpretation. He writes, "Think of this thing we've been talking about under two names — now, what would have happened to *it* if the line had been absorbed? Now you're stuck. I haven't used either name. You know well enough what thing is in question" (1986, 250, Lewis' italics). The thing in question is an n-entity. Alan Sidelle, argues for the existence of n-entities (which he calls "stuff"): "[Everyone] has to allow for the palpable fact of variation across space and time. The world is certainly not an undifferentiated blob, everywhere and always the same. But how does one say what the world is truly like without [involving any modality]? One may be tempted to simply replace [modal] objects with the [nonmodal] stuff of which they are made. ... Stuff looking, of course, just as the world looks, but devoid of modal properties, identity conditions, and all that imports" (1998, 442 & 1989, 55).

to support the existence of objects which have (non-trivial) modal properties.⁹ Two aspects of n-entities will be important in what follows: (i) grounding modality worries do not arise for n-entities, i.e. because they have no (non-trivial) de re modal properties, and (ii) n-entities have empirical properties. An object's empirical properties are the properties it has which aren't prefixed by necessity or possibility, e.g. *being self-identical*, *being mammalian*, *being red*, *being taller than 6'*.¹⁰ I've defended the existence of n-entities elsewhere.¹¹ Since my central aim here is to show how hylomorphists can answer the hard question without relying on primitive (non-trivial) de re modality and a variety of accounts of the material part are compatible with this aim, I won't repeat my arguments in favor of taking the material part to be an n-entity.

The general hylomorphist strategy I defend should be of interest even to those who reject n-entities. Anyone who thinks the modal properties of ordinary objects differ from the modal properties of the basic fundamental entities can utilize the general grounding strategy I present. N-entities are a place-holder for what our best science tells us there is. Arguably, whatever this turns out to be, it's not going to have exactly the modal properties we associate with ordinary objects. A grounding story, like mine, which tells how to get from the existence of such basic entities to ordinary objects should, thus, be of general interest even to those who reject the specifics of the view I endorse, i.e. who reject the existence of n-entities.¹²

II. The Formal Part of Ordinary Objects

The formal part of an ordinary object is a sort property. A sort property is a property which individuates an object. It tells what sort of object the object is and gives the object's modal nature. *Being a rock*, *being a dog*, and *being a tree* are all sort properties because they're all properties which individuate sorts of objects: rocks, dogs, and trees. *Being blue*, *being big*, and *being waterish*, on the other hand, aren't sort properties. They're all properties objects might have, but they aren't properties which pick out a certain sort of object.¹³

Three aspects of sort properties will be important in what follows: (i) sort properties specify the empirical properties an n-entity must have if it's apt to be an object of the relevant sort, (ii) entailment relations between sort properties and other properties make it the case that an object which has a sort property as a part thereby instantiates the modal properties entailed by the sort property, and (iii) sort properties exist prior to, and independently of, their instances.

With regard to (i), consider, for example, the sort property *being a rock*. The sort property *being a rock* specifies the empirical properties an n-entity must have to be rock-apt. Although it's geologists, rather than philosophers, that focus specifically on the empirical properties of rocks, we have — simply qua human beings that interact with rocks frequently — a fairly good idea of the relevant empirical properties. These include such properties as *having a mass between m (larger than pebble mass) and m_n (smaller than boulder mass)*, *being made of granite or limestone or quartz or ...*, *being appropriately distinct from one's environment (i.e. not embedded in a mountain made of the the same substance)*, etc.

With regard to (ii), consider, for example, the sort property *being a rock*. This property stands in entailment and compatibility relations with other properties, e.g. *being a rock* entails *being material*, *being cohesive*, and is compatible with *being painted white*, *being first at location l and then at location l'* . It is because of these

⁹ See Sider (2011) for arguments that the world lacks fundamental modal structure. Sider and I agree that the world lacks fundamental modal structure. Sider thinks fundamental objects have (non-trivial) de re modal properties; they just don't have them fundamentally. Whereas I think the fundamental objects — which I take to be the n-entities — don't have (non-trivial) modal properties. See Sidelle (1989) for arguments that objects can't be separated from their (non-trivial) de re modal properties in the way that endorsing modality, but taking it to be non-fundamental, requires.

¹⁰ Some argue that there are no empirical properties, i.e. that all properties at least implicitly involve modality. One might, for instance, argue that *being red* isn't really empirical because *being red* necessarily entails *being colored*. This is a misunderstanding of what an empirical property is. An empirical property isn't a property that doesn't, itself, involve any modality. It's a property which isn't prefixed by "necessarily" or "possibly". It may be that the property *being red* is itself implicitly modal because it necessarily involves *being colored*. It doesn't, however, follow from this that objects that have *being red* thereby have a modal property. All that follows is that, necessarily: if o is red, then o is colored. It doesn't follow that o is necessarily colored, it only follows that, if o ceases being colored, o must also cease being red.

¹¹ See Goswick (2015), Goswick (2018a), and Goswick (2018b).

¹² One might reject n-entities, but accept other "minimally modal" objects such as Heller's 4D hunks of matter (Heller 1990) or Jubien's stuff (Jubien 1993). One could defend a view whereby ordinary objects are composites of 4D hunks of matter + form. Such a person could follow the modal grounding story I tell for ordinary objects, but would need to tell a separate story about what grounds the modal properties of 4D hunks of matter. One could, alternatively, argue that ordinary objects are composites of quantum fields + form. Such a person can follow the general strategy I use for grounding the modal properties of ordinary objects, but will need to provide a separate account of what — if anything — grounds the modal properties of quantum fields.

¹³ See Wiggins (2001) and Burke (1994) for further discussion. What Burke takes to be an object's dominate sortal (e.g. *statue*), I take to be its sort property (e.g. *being a statue*).

entailment and compatibility relations that rocks have the (non-trivial) modal properties they have, e.g. *being necessarily material*, *being necessarily cohesive*, *being possibly painted white*, *being possibly in the next room*.¹⁴

With regard to (iii), in section III I will argue that ordinary objects (e.g. rocks) reduce to n-entities and sort-properties. In order for such a reduction to be possible, sort-properties must exist independently of, and prior to, the ordinary objects which have them as parts. Certain accounts of properties, such as an Aristotelian one in which the existence of a universal depends on the existence of an instance of it, are thus incompatible with my project.

There are further questions to explore with regard to sort properties, e.g. what overall account of properties do they fall within, are they abundant or sparse, how general can they be (e.g. is *being a mammal* a sort property or is it only properties denoting specific species of mammals – *being a dog*, *being a horse* – which are sort properties), for each sort *s* exactly what modal properties follow from an object's being of sort *s*. However, just as with n-entities, the exact details don't matter. Any account of properties which is compatible with sort properties playing the three roles outlined above is acceptable. I will, hence, leave this question for another day.¹⁵

III. Response-Dependent Hylomorphism

Response-dependent hylomorphists argue that not just any matter (n-entity) and any form (sort-property) combine to make an ordinary object of sort *s*. Rather, n-entity *n* sums with sort-property *S* to form an object of sort *s* (at spacetime region *r*) only if: (1) *n* is *s*-apt, and (2) some subject is having the *s*-response to *n*. For example, n-entity 1 sums with *being a rock* to form a rock only if: (1) n-entity 1 is rock-apt, and (2) some subject is having the rock-response to n-entity 1. Understanding these conditions requires understanding what it is for an n-entity to be *s*-apt and what it is for a subject to have the *s*-response to an n-entity.

***S*-Aptness (of n-entities)**

S-Aptness: N-entity *n* is *s*-apt to be an object of sort *s* iff none of the empirical properties that *n* has rule out its being an object of sort *s*.

Consider an n-entity, *n*₁, which is round, grey, made of granite, has a mass of 500g, and is distinct from its surroundings. *N*₁ is rock-apt. There are lots of other objects *n*₁ is, also, *s*-apt to be. For instance, it's mere-aggregate-apt and time-slice-of-a-rock-apt. Just as there are lots of objects *n*₁ is *s*-apt to be, there are lots of objects *n*₁ isn't *s*-apt to be. For instance, *n*₁ isn't elephant-apt (it's lacking the empirical property *standing in evolutionary chain e*) and *n*₁ isn't swing-set-apt (it's lacking the empirical property *being swing set shaped*).

¹⁴ See Jubien 1993 for a Platonic account of property entailment.

¹⁵ In so doing, I am in good company. Hylomorphists in general focus on the *role* form plays in their overall theory, rather than on the *nature* of form itself. Koslicki, for instance, takes an ordinary object's formal part to be a part of the ordinary object and to specify the type and arrangement of the matter which figures in the object (2008, 255). She is neutral on the specific nature of the form and, in particular, on whether it is an object or a property (2008, 254). In his (1982) Fine speaks specifically of form as a property which is part of the ordinary object: "Given any object *x* and description (property) Φ possessed by *x*, we shall suppose there is a new object *x* qua Φ . Thus if *x* is Socrates and Φ the property of *being a philosopher*, then the new object is Socrates qua philosopher. [The] qua object should be regarded as some sort of amalgam of the given object and the property" (100). In his (1999) Fine continues to view form as a property which is part of the ordinary object: "A rigid embodiment is to be understood partly in terms of its material components, but also partly in terms of its relational principle *R*. A variable embodiment *F* is to be understood wholly in terms of its functional property *F*. [It] may plausibly be argued that these principles [*R* and *F*] are parts of their embodiments and, hence, parts of the corresponding material things. [On] the view I wish to advocate, properties and relations will be ... involved in the identity of [material things]" (73). In his (2008), rather than focusing on the nature of form, Fine focuses on composition. He argues that the method of composition which yields matter/form composites isn't standard mereological composition: "We should simply accept that it is a further basic method, in addition to fusion, by which wholes may be formed from parts. From the intuitive point of view, we might think of the form *F* in the matter-form combination $\Sigma(m, F)$ as a kind of mould to which the matter *m* is meant to conform. In moulding the matter to the form, we obtain a composite of which both the mould and the matter will then be parts. [A] matter/form composite will exist just in case the matter exists, the form exists, and the matter at some time has the form" (112). In his 2006, Johnston defends a non-mereological version of hylomorphism. He takes hylomorphism to be "the thesis that the real definition of each [ordinary object] is to be given in terms of its parts ('matter') and principle of unity ('form')" (676). The principle of unity for an object *x* is a relation which holds of some other objects *o*₁–*o*_{*n*} such that what it is for *x* to be is for the relation to hold among *o*₁–*o*_{*n*} (653). Johnston argues that a form (i.e. a principle of unity) is not a part of the ordinary object it's the form of: "The form is a principle which must be invoked in the real definition of the whole, but it is not a further part" (2006, 659). He takes ordinary objects to be "wholly spatiotemporal, in that all their parts are located in space and time" (2006, 675). He takes principles of unity to be "universals in the sense of items potentially in common to many distinct individuals" (2006, 659). He doesn't – at least in his 2002 and 2006 – discuss what account of universals (e.g. Platonic, Armstrongian, Lewisian) he endorses.

As mentioned in section II, it's the sort properties themselves which ground the fact that n_1 is rock-apt, but not swing-set-apt. The sort property *being a rock* determines what empirical properties are compatible with being a rock. The sort property *being a swing set* determines what empirical properties are compatible with being a swing set. It's the fact that the empirical properties n_1 has are compatible with being a rock (as determined by the sort property *being a rock*) that makes it the case that n_1 is rock-apt. It's the fact that the empirical properties n_1 has aren't compatible with being a swing set (as determined by the sort property *being a swing set*) that makes it the case that n_1 isn't swing-set-apt.

Sort-Responses (to n -entities)

Sort-Responses: To respond to an n -entity as if it's an object of sort s .

To have a sort-response to n -entity n , is (tacitly or overtly) to respond to n as if it's an object of a particular sort, i.e. an object which has a modal nature. To have the rock-response to n_1 is to treat n_1 as if it's a rock; to think of or behave toward n_1 as if it's a rock. The exact nature of human sort-responses is a question for psychologists, not for philosophers. First-person experience suggests that we have such sort-responses automatically and that our having sort-responses is, generally, a passive process rather than an active process. We don't contemplate some matter, think about the various sorts we could categorize it into, and then choose one. Rather, we simply have the s -response to an n -entity. Which sort-responses we have is, presumably, influenced by the culture we live in and the language we speak, as well as by our biology.^{16,17}

Not just any response is a sort-response. Sort-responses pick out *sorts* of objects, i.e. objects which have a modal nature. The rock-response, dog-response, and tree-response are sort-responses because they're responses that pick out objects with modal natures: rocks, dogs, and trees. The blue-response, big-response, and rock-like-thing-over-there-response, on the other hand, aren't sort-response. They're all responses one might have upon encountering an n -entity, but they don't pick out a sort of object.

Any subject which has the requisite cognitive abilities can have sort-responses.¹⁸ Humans have sort-responses. Whether non-human animals have sort-responses is a question for ecologists. The philosopher can certainly imagine alien subjects who would have different sort-responses than we have. Imagine a species which believes in in-cars and out-cars rather than in cars. Or a species of mereological essentialists who believe in objects which can't lose parts. The objects they create won't, of course, be *that* different from the ones we create. Aliens with different sort-responses can create mere aggregates where, faced with qualitatively identical n -entities, we'd create rocks. But they can't create elephants where we'd create rocks. The empirical properties of the n -entities limit the subject's creative power.

Response-Dependent Composition

When the two conditions are met — i.e. when (1) there's an s -apt n -entity n at region r and, (2) a subject has the s -response to n — an ordinary object of sort s comes into existence. For example, when (1) there's a rock-apt n -entity at region r and (2) a subject has the rock rock-response to the rock-apt n -entity, then a rock comes into existence. Response-dependence, thus, comes into the picture at the level of composition.

¹⁶ Our having the rock-response is subservient to someone else's rock-response going back in a chain to some original responder who either actively intended to pick out only objects which have the modal properties rocks have or, more likely, whose community simply used "rock" in such a way that it eventually came to denote objects with modal nature r . (cf. Quine 1960).

¹⁷ One might worry that, in order to have the car-response, one has first to have the transmission-response, the carburetor-response, the windshield-response, etc. to all the parts we standardly think cars have. Fortunately, my theory doesn't require this. We can distinguish two ways of creating cars. *Hard Way:* There's an entailment relation between ordinary objects o_1 - o_n and arrangement a to the existence of a car. So, anytime ordinary objects o_1 - o_n exist and are arranged in way a , a car exists. *Super Keen Mechanic* might have the engine-response to an engine-apt n -entity (thereby brining an engine into existence), the transmission response to a transmission-apt n -entity (thereby brining a transmission into existence), etc. for every o in o_1 - o_n . So long as some subject keeps having the relevant sort-response to each object in o_1 - o_n and o_1 - o_n stand in arrangement a , a car will exist (even if no one ever has the car-response to the relevant n -entity). I'm sure cases like this sometimes happen, but it's not the norm. *Easy Way:* There's a car-apt n -entity. Jane has the car-response to it. Now there's a car. Jane is entirely ignorant of the internal parts of her car, she never has the transmission-response, engine-response, etc. These internal parts, of course, matter because they're part of what makes the n -entity car-apt, but Jane need not know this. Suppose, moreover, that Jane lives alone on a tall mountain and never shows anyone else her car. So, no one ever has the transmission-response, engine-response, etc. to any of the n -entities that partially overlap the car-apt n -entity. In this case, there's a car without an engine, a transmission, etc. But, have no worries, the n -entity which is the material part of the car, has engine-apt bits, transmission-apt bits, etc. — which is all you need to have a functioning car. So, creating cars isn't as hard as one might have first thought. One needn't have the s -response to every n -entity which, intuitively, is part of the car; there only need be such n -entities. This ensures there's an n -entity which is car-apt.

¹⁸ Any subject, that is, who is cognitively sophisticated enough to have e.g. a rock-response or a mere-aggregate-response or ... as opposed to just a there's some rock-like-stuff-over-there-response.

An s-apt n-entity (“matter”) exists and sort property s (“form”) exists. What doesn’t exist, prior to the response of a subject, is the sum of the n-entity and the sort property. Composition (between an n-entity and a sort property) is, thus, response-dependent.

Ordinary Object Composition (RD): An n-entity n which is s-apt sums with the sort property being s to compose an ordinary object of sort s iff a subject has the s-response to n.

For example, an n-entity sums with the sort property *being a rock* to compose a rock iff the n-entity is rock-apt and a subject has the rock-response to it. Likewise, an n-entity sums with the sort property *being a tree* to compose a tree iff it is tree-apt and a subject has the tree-response to it.^{19,20} Ordinary objects are mereological sums composed of n-entities and sort properties, so e.g.

Rock R = rock-apt n-entity + *being a rock*
 Tree T = tree-apt n-entity + *being a tree*²¹

It is worth noting that ordinary object composition (RD) concerns the existence of ordinary objects, not their modal properties. A response-dependent hylomorphism which is response-dependent due to endorsing ordinary object composition (RD) is as realist about modality as is any non-response-dependent view. So, for instance, although the advocate of ordinary object composition (RD) thinks that ordinary objects depend on subjects for their existence, she doesn’t think they depend on subjects for their modal profiles. It’s an ordinary object’s sort-property (e.g. *being a rock*) which determines its modal profile. If we’d been different (i.e. lacked rock-responses) rocks wouldn’t have existed, but it would still be the case that, were rocks to exist, they would be necessarily cohesive and possibly grey.

There are stronger and weaker forms of response-dependent composition depending, for example, on (i) whether sort-responses are needed only to trigger the composition relation or both to trigger and maintain it, (ii) whether subjects have to be in direct causal contact²² with the n-entity they’re responding to or can respond indirectly, and (iii) who’s responsible for triggering/maintaining the composition relation – e.g. any subject, a privileged subject or group of subjects, an ideal responder, etc. The particular view I favor is a strongly

¹⁹ Note that in defending a response-dependent version of hylomorphism I part company with Koslicki, Fine, and Johnston, all of whom are more (Koslicki and Johnston) or less (Fine) Realists. I, also, part company with them by taking ordinary objects to be mereological sums. I’m able to do this because, rather than relying on a structured version of summation as they do, the relevant structure on my view arises from s-aptness and sort-responses.

²⁰ A note on vagueness is in order. Given the present account, there are many ways in which vagueness for ordinary objects may arise. I’ll discuss only two of them. Way 1: There is vagueness concerning s-aptness. For example, given an n-entity n which is intermediate in size between a rock and a boulder, it’s vague whether n is rock-apt or boulder-apt. Suppose Sue has the rock-response to n. If n is rock-apt, Sue’s created a rock. If n is boulder-apt (but not rock-apt), Sue has not created a rock. It’s vague whether a rock exists because it’s vague whether n is rock-apt. Way 2: There is vagueness concerning subject responses. Suppose n is rock-apt, but it’s vague whether Sue’s had the rock-response to n. If Sue’s had the rock response to n, Sue’s created a rock. If Sue hasn’t had the rock-response to n, Sue hasn’t created a rock. It’s vague whether a rock exists because it’s vague whether Sue’s had the rock-response.

²¹ An object’s sort-property plays a role twice-over: first, as being one of the objects’ two main parts, second as being one of the many properties the object has. One might worry this smacks of redundancy, but the role played by the sort-property part is importantly different to the role played by the instantiated sort-property (even though both roles are filled by the same sort-property). The easiest way to see this is by way of example. Consider rock R. Rock R just is the mereological sum of rock-apt n-entity 1 and the sort property *being a rock*. All the empirical properties rock R has stem from its having n-entity 1 as a part, e.g. rock R’s mass is 100g because n-entity 1’s mass is 100g and rock R inherits its mass from its n-entity part, rock R is in my hand because n-entity 1 is in my hand and rock R inherits its spatiotemporal location from its n-entity part, etc. All the (non-trivial) de re modal properties rock R has stem from its having *being a rock* as a part, e.g. rock R is necessarily cohesive because *being a rock* entails *being cohesive* and rock R’s modal properties are determined by its sort-property part, rock R is *possibly in your hand* because *being a rock* is compatible with *being in your hand* and rock R’s modal properties are determined by its sort-property part. In general, the sort-property an object has as a part determines its modal profile. Now, consider the role played by the instantiated sort-property *being a rock*. Rock R instantiates many properties, e.g. *being grey*, *being in Texas*, *being necessarily physical*, *being possibly tossed in a lake*. Among the many properties rock R instantiates is the property *being a rock*. That rock R instantiates this property is of no particular importance metaphysically. It’s a fact about rock R – just as e.g. that its grey and in Texas are facts about rock R. All the important metaphysical work is done by rock R’s having *being a rock* as a part. (One disinclined to hylomorphism might ask if one could do away with the redundancy by reducing ordinary objects to n-entities which e.g. instantiate the property *being a rock*, rather than to sums which have rock-apt n-entities and the property *being a rock* as parts. Given that only objects which have rock modal profiles can instantiate *being a rock* and given that n-entities lack complex modal profiles, no n-entity will instantiate *being a rock*. See Sidelle 1989 for further argumentation as to why this later strategy won’t work.)

²² For further information on response-dependence see Baker (1997, 2004), Jackson and Pettit (2002), Pettit (1991), Searle (1995), and Thomasson (2003, 2007).

response-dependent one in which a subject is required both to trigger and maintain the composition relation, subjects have to be in direct causal contact with the n-entity they're responding to, and the responses of any subject who's cognitively sophisticated enough to make the relevant sort distinctions are sufficient to create an object.²³

Although a full defense of strong response-dependence is beyond the scope of this paper (and I'm far less committed to strong response-dependence than I am to the general claim that the best way to account for the existence and modal properties of ordinary objects is via hylomorphism), a few words regarding the prima facie plausibility of strong response-dependence are in order. A consequence of endorsing a strongly response-dependent form of hylomorphism about ordinary objects is that, absent responding subjects, there are no ordinary objects such as rocks, trees, and dogs. One might take this consequence to be so costly – Surely the rock continues to exist even when no one is looking! Surely there were dinosaurs (even though there were no responding subjects in the Jurassic Age)! – as to outweigh any benefits of a strongly response-dependent hylomorphism.

The advocate of a strongly response-dependent hylomorphism has two options here: error-theory or linguistic revision. The underlying ontology is the same in both cases. There are rock-apt n-entities and there were (in the Jurassic Age) dinosaur-apt n-entities. That there are such n-entities has nothing to do with subjects; it has only to do with what the sort properties *being a rock* and *being a dinosaur* require and with whether there are any n-entities that meet these requirements. There is a rock-apt n-entity in my backyard. Sometimes a subject is responding to it – at these times there's a rock. Other times no subject is responding to it. At this point, error theory and linguistic revision diverge.

The error theorist says the word "rock" refers only to objects which instantiate the property *being a rock*. The only objects which instantiate *being a rock* are hylomorphic objects which have a rock-apt n-entity as their matter and the sort property *being a rock* as their form. Since – given strong response-dependence – there is no such object when there is no responding subject, the error theorist says there is no rock (although, of course, there is still a rock-apt n-entity). The error theorist, thus, thinks some of the claims we make about ordinary objects – "There were dinosaurs." "Rocks can exist unresponded to." – are false. The error theorist attempts to mitigate this cost by pointing out that which ordinary object claims are false is systematic and explicable. In particular, we'll get the existence and persistence conditions of ordinary objects wrong when we confuse the existence/persistence of an s-apt n-entity for the existence/persistence of an ordinary object of sort s. We think dinosaurs existed because we mistake the existence of dinosaur-apt n-entities for the existence of dinosaurs. We think rocks exist unresponded to because we mistake the existence of rock-apt n-entities for the existence of rocks. Similar 'errors' occur whenever natural language hasn't caught up with (or can't be bothered to note in everyday discourse) scientific discoveries. We say, "The sun rises in the East" even though we haven't believed Ptolemaic astronomy in some time. We say, "That train is moving and this one is standing still" even though we haven't believed in Newtonian physics for some time. The philosophical view I'm proposing – a strongly response-dependent hylomorphism about ordinary objects – is, like Copernican astronomy and Einsteinian physics, an ontological view about the nature of reality. It's a new view. We don't yet think of ordinary objects as being sums of n-entities and sort-properties and we don't yet think of ordinary objects as depending on subjects' responses (to apt n-entities) for their existence. So, of course, we don't speak as if they are so dependent. Of course, we systematically mistake rock-apt n-entities for rocks. That de re modality isn't a deep feature of the world – and, hence, that objects having modal properties aren't as independent/fundamental/real as we once thought they were – isn't something reality wears on its sleeve.

Some may find error theory unappealing. The linguistic revisionist says, if strong response-dependence is correct, the best thing isn't to endorse an error theory, it's to revise the extension of our ordinary object terms. Let "rock" denote both rock-sums (i.e. sums of rock-apt n-entities and the sort property *being a rock* – what the error theorist calls "rocks") and rock-apt n-entities. Let "dinosaur" denote both dinosaur-sums (i.e. sums of dinosaur-apt n-entities and the sort property *being a dinosaur* – what the error theorist calls "dinosaurs") and dinosaur-apt n-entities. Now we can say that there were dinosaurs and that rocks exist

²³ I prefer this view because I think it locates the existence of objects which have (non-trivial) de re modal properties just where they should be located: as things which are the creations of subjects. The existence of ordinary objects which have (non-trivial) de re modal properties isn't a deep, objective, subject-independent feature of the world. It's a feature about us, our interests and our concerns. Such a strong version of response-dependence is not without its costs. However, for those whose naturalism prevents them from taking the existence of objects which have (non-trivial) de re modal properties to be a feature of the (objective) world, yet who still want to recognize the role such objects play in our lives, it is an attractive view.

unresponded to. (But we can no longer ‘read’ an objects’ modal profile off its being denoted by a certain English word, e.g. some rocks – the ones that are rock-aft n-entities – won’t have any of the modal properties we intuitively think rocks have, other rocks – the ones that are rock-sums – will have many of these properties.)²⁴

I won’t take a stand here on whether the adherent of a strongly response-dependent hylomorphism should prefer error theory or linguistic revision. The adherent of any ontological theory which deviates from our folk ontology has, to some degree, to be either an error theorist or a linguistic revisionist. N-entities aren’t part of our folk ontology, so the adherent of a strongly response-dependent hylomorphism will have, to some degree, to be either an error theorist or a linguistic revisionist. This is a (relatively benign, in my opinion) feature of the view. It is shocking to find out there were no dinosaurs or that rocks exist unresponded to. But once one understands why this is the case (i.e. because of the underlying ontology of ordinary objects), what the motivation is for taking ordinary objects to have such ontology (i.e. to account for their modal properties in a world that, independent of subjects, lacks modal umpf), and that there’s a near-by close contender which has fooled us into thinking dinosaurs existed and rocks exist unresponded to (i.e. dinosaur-aft n-entities and rock-aft n-entities) this initial shock is no longer compelling.²⁵

IV. Hylomorphism, Response-Dependence, and Grounding Modality

Hylomorphists argue ordinary objects consist of a material part and a formal part. The formal part is standardly taken to give the object’s modal profile. Hylomorphic objects, thus, come ready made with their modal natures. For hylomorphists, essence is prior to existence. Hylomorphists, thus, approach grounding modality differently than do non-hylomorphists.²⁶ Rather than taking the existence of some object *o* for granted and then telling a grounding story about which modal properties *o* has, hylomorphists take the modal profiles of objects for granted and then tell a grounding story about which objects exist. For hylomorphists, the hard part isn’t grounding modality; the hard part is grounding existence.

All hylomorphists use form to (easily) ground modality. An ordinary object is the sort of object it is in virtue of having a certain sort property as a part, e.g. *R* is a rock in virtue of having the sort property *being a rock* as its formal part. An ordinary object has the modal properties it has in virtue of the sort of object it is, e.g. *R* has the (non-trivial) *de re* modal properties it has in virtue of being a rock.

All hylomorphists then face the hard question: In virtue of what does rock *R* (as opposed to only lump *L* or aggregate-of-granite-atoms *A*) exist?²⁷ Here the response-dependent hylomorphist has an advantage over the advocate of non-response-dependent hylomorphism. According to response-dependent hylomorphism,

²⁴ It should be noted that strongly response-dependent hylomorphism doesn’t capture all and only the modal properties we intuitively think ordinary objects have. For instance, intuitively we think rocks have the modal property *possibly existing without being responded to*. Given response-dependence about composition – i.e. given that an ordinary object of sort *s* only exists if a subject is having the *s*-response to an *s*-aft n-entity – it follows that an ordinary object of sort *s* cannot exist in the absence of all subjects, so – contra our modal intuitions – rocks do not have the property *possibly existing without being responded to*. My response to this worry is to bite the bullet. It’s true that my view doesn’t capture all and only the modal properties we intuitively think ordinary objects have. But it captures enough of them to be a viable view and, for the ones it doesn’t capture, I can offer a systematic explanation of why we’re mistaken, viz. we think rocks have the modal property *possibly existing without being responded to* because we tend to confuse rocks with rock-aft n-entities. Rock-aft n-entity 1, which is buried deep in my garden and has never been seen by any subject, has the actual property *existing without being responded to*. Since, given *Fx*, $\Diamond Fx$ is trivial, *possibly existing without being responded to* is a trivial *de re* modal property of n-entity 1. We mistake rock-aft n-entity 1 for a rock and, thus, think rocks have the modal property *possibly existing without being responded to*.

²⁵ Imagine how people in the 16th century felt when they first heard the heliocentric view. It would have been shocking to be told the sun doesn’t rotate around the Earth. But once one understood why this is the case (i.e. because of the underlying arrangement of heavenly bodies), what the motivation is for taking the heavenly bodies to have that arrangement (i.e. the scientific and mathematical evidence provided by Copernicus and Galileo), and why we were fooled into thinking the sun revolved around the sun (i.e. because we don’t have a God’s eye perspective and from our perspective on Earth we can’t see that the Earth is moving) this initial shock is no longer compelling.

²⁶ For non-hylomorphic accounts of grounding modality see Bealer (2002), Camerone (2012), Elder (2004), Ellis (2009), Forbes (1985, 1989), Gibbard (1975), Goswick (2010), Hale (2002), Humberstone (1991), Hupakka, Keinanen, and Korhonen (1999), Kripke (1972), Paul (2004), Quine (1966), and Sider (2003).

²⁷ The hylomorphist rejects Bennett’s (2004) gloss of the difference between (i) the sort being more fundamental and the modal properties being derived from it and (ii) the modal properties being more fundamental and the sort being derived from them. The hylomorphist takes this distinction to be crucial. It’s crucial because the available grounding stories differ. If you take sorts to be more fundamental and to ground modality, then you need to tell a story about what grounds sorts, i.e. about which sorts of objects exist. If you take modality to be more fundamental and to ground sorts, then you need to tell a story about what grounds modality, i.e. about why objects have the modal properties they have. See Fine 2008 for arguments that sort is prior to modal profile. See Sidelle 2016 for arguments that it is not.

the existence of ordinary objects is jointly grounded by the existence and empirical properties of n-entities, by the existence of sort properties, and by the responses of subjects (which determine whether an s-apt n-entity sums with sort property S to compose an ordinary object of sort s).²⁸ Non-response dependent hylomorphists have no such tidy grounding story to tell.^{29,30}

Conclusion

I have suggested that, although the hard question for matter-only accounts of ordinary objects is, “Which modal profile does that object have?”, the hard question for hylomorphic accounts of ordinary objects is, “Which objects exist?”. Matter-only view have an easy time grounding the existence of objects which have modal properties and a hard time grounding the object’s having of modal properties. Hylomorphic views have an easy time grounding an object’s having of modal properties and a hard time grounding the existence of objects which have modal properties. I have argued that response-dependent hylomorphists have an easier time answering their hard grounding question than do either matter-only adherents or non-response-dependent hylomorphists and I have presented a sketch of my preferred version of response-dependent hylomorphism.³¹

Competing Interests

The author has no competing interests to declare.

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²⁸ It is worth re-iterating that the response-dependence concerns the existence of ordinary objects, not their modal properties. The version of response-dependent hylomorphism defended here is as realist about modality as is any non-response-dependent view. So, for instance, although the response-dependent theorist thinks that rocks depend on subjects for their existence, she doesn’t think they depend on subjects for their modal profiles. If we’d been different (i.e. lacked rock-responses) rocks wouldn’t have existed, but it would still be the case that, were rocks to exist, they would be necessarily cohesive and possibly grey.

²⁹ Koslicki appeals to our best science to determine which kinds of objects exist (2008, 200–234). Since our best science doesn’t make the fine-grained non-empirical distinctions philosophy does (e.g. between an accidentally-but-always negatively charged particle and an electron, between a statue-shaped lump and a statue, etc.), she thereby abandons the task of grounding the existence and modal properties of such fine-grained objects. Given her neutrality about essentialism and skepticism about grounding, she does this willingly, see Koslicki 2008, pages 170, 213–218 and 2015, pages 19–21. Fine is a plenituder about existence. He thinks every matter/form combination that can exist at region r, does exist at region r (1999, 73). Johnston is, also, a plenituder about existence: “It seems that the only non-gerrymandered position in the domain is one that embraces a full plurality of principles of unity, which allows that the holding of any relation or property of some items makes for a whole” (2006, 697–698). In her (2004, Bennett argues convincingly that plenitude doesn’t answer the existence grounding question.

³⁰ Although *grounding* modality is easier for hylomorphists than for the adherents of matter-only views, hylomorphism and matter-only views are on a par when it comes to modal epistemology. Any Realist account of modality – i.e. any account which takes modality to be a feature of the world rather than a feature of our thought about the world – will face the hard question of saying how we know what modal properties objects have. Although the strongly response-dependent hylomorphist view of ordinary objects defended here is anti-Realist about the existence of ordinary objects (i.e. because an ordinary object’s existence depends in part on subjects’ responses), it is Realist about modality (i.e. because ordinary objects have the modal properties they have independent of subjects. Answering the modal epistemology question requires the strongly response-dependent hylomorphist to say, for each sort property s, exactly what modal properties *being s* entails. I leave this project for future work.

³¹ Thanks to the members of my WIP metaphysics reading group (Kristie Miller, Mike Raven, Jon Simons), to my commentator (Mike Raven) and attendees at the Hylomorphism Conference (Banff 2017), and to two anonymous *Metaphysics* reviewers for helpful suggestions and comments.

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