Determination and Hylomorphism

Defining the Relationship Between Matter and Form

Hylomorphism is a system of metaphysics, first championed by Aristotle, which analyzes objects in terms of two principles: form (i.e., the object's essence) and matter (the underlying object(s) in which the form is instantiated). One contemporary philosopher, Michail Peramatzis, has characterized the relationship between form, matter, and the compound of the two as akin to the relationship between a determinant, determinable, and determinate, respectively. In this paper I build on Peramatzis' account by defining the relationship between form and matter in a way that retains the useful elements of determination while sidestepping the difficulties that identifying hylomorphism with determination causes. In particular, I define the matter of a matter-form compound as *a set of objects for which an object is a member of the set if and only if it "engages" (in a certain way) in the production of a certain activity or capacity*. This activity or capacity is the form. In virtue of form's role in this definition, form defines the matter of an object and furnishes the ground for the matter's unity. The result is a concept of matter as a determinable that is especially dependent on a single determinate way of being, namely, "being informed." This paper is not an exegesis of Aristotle's works but rather an attempt to formulate an aspect of hylomorphism in a coherent and rigorous manner.

In Section 1, I explore Peramatzis' "Causal-Explanatory Model" of hylomorphism, in which he identifies the essence of an object or phenomenon with its cause. In Section 2, I summarize his analysis of determination as a way to understand hylomorphism. In Section 3, I propose several difficulties with the analogy between determination and hylomorphism, and in Section 4 I draw from Anna Marmadoro and the Causal-Explanatory Model to build out the definition of the relationship between matter and form. Section 5 sees me overcome objections

through Peramatzis' "True Grit" account of form, and freshly equipped with these tools I make a return to determinables and determinates in Section 6.

1. Peramatzis' Causal-Explanatory Model

Michail Peramatzis offers a convincing interpretation of Aristotelian hylomorphism in his essay "Aristotle's Hylomorphism: The Causal-Explanatory Model." Peramatzis starts by examining how we describe or explain a phenomenon, thunder for example. Following Aristotle, he proposes the following syllogism as an analysis of thunder:

> [Noise of type N] belongs to all [quenching fires of type Q].
> [Quenching fires of type Q] belong to all [clouds of type C].
> [Noise of type N] belongs to all [clouds of type C]. (Peramatzis, 2018, p. 14)

Thus, thunder here is described as some quality or state (Noise of type N) belonging to some underlying phenomenon, or substratum (clouds of type C). Responsible for the connection between the quality and the substratum is the phenomenon's cause—in this case, quenching fires of type Q.

Generalizing from this example, Peramatzis maintains that we can arrange other phenomena in a similar syllogism:

> *A* belongs to all *B*s.
> *B* belongs to all *C*s.
> *A* belongs to all *C*s. (Peramatzis, 2018, p. 14)

Thus, we can define a phenomenon *D* like so: "$D =_{\text{def}} A$ belonging to *C* because of *B*" (Peramatzis, 2018, p. 15). *A* is the quality or state, *C* is the substratum, and *B* is the cause and explanation. *B* explains *A*, which modifies *C*. So, an explosion can be defined as the violent expansion of gases (*A*) belonging to combustible material (*C*) as a result of a rapid chemical or nuclear reaction (*B*). An earthquake is a shaking (*A*) belonging to the earth (*C*) because of a sudden slip on a fault (*B*).

Peramatzis identifies the cause, *B*, with the phenomenon's "essence," noting that in Aristotle's view, "essence and cause are co-dependent or even identical. To be the essence of thunder is to be what causes the phenomenon of thunder—what brings on the occurrence of noise in the clouds" (2018, p. 14). So, at root, thunder *is* "quenching fires of type Q," an explosion *is* a rapid chemical or nuclear reaction, and an earthquake *is* a sudden slip on a fault.

In the case of a process such as thunder, *B* gives an *efficient* cause of *A*, that is, *B* is how *A* comes to be. For "substances"—Aristotle's metaphysically basic objects—the essence is a different type of cause: a final cause. Peramatzis states that Aristotle "seems to identify the referent of the *B*-term, the essence being a human, with the final cause. This final cause is perhaps to be understood as being for the sake of realizing a certain sort of rational life" (Peramatzis, 2018, p. 15).

How do *A*, *B*, and *C* link to the concepts of matter and form? First, *C*'s status as the substratum of the object or phenomenon clearly identifies it with matter. *B* is the form, since it is the essence, cause, and explanation of the object or phenomenon. This leaves *A*, the quality or state. *A* mediates between form and matter: the form explains and causes *A*, and the *A* "shapes or 'conditions'" the matter to yield the compound (Peramatzis, 2018, p. 20). Because of its shaping role, I will call *A* the "structure" of the object.

2. *A*, *B*, and *C* as Determinate, Determinant, and Determinable

Peramatzis' next move is to bring out a limited analogy between hylomorphism and determination. However, before launching into his argument, consider a non-hylomorphic example of determination: the relationship between "color" and "red." Color in general is a determinable concept, while red is a determinate of color. The first thing to note is that red is not color *plus* some extra element (as the species of a genus commonly is), but red is nevertheless a

species of color—determination is a form of *non-conjunctive specification* (Wilson, 2021). Second, it is impossible for something to be merely "colored"—every colored surface must in reality be a determinate color. Thus, "color" is an abstraction from instances of fully determinate color.

In a similar way, Peramatzis claims that the matter of an object, considered without form, is a determinable, a mere abstraction. "Without a form," Peramatzis says:

> …the matter is not a real entity at all but only an abstract and merely determinable feature or a thing with such a feature… an abstract item should be understood as an entity which is grasped by abstracting in thought from a fully real, determinate entity" (2018, p. 21).

The informed compound, then, is the "fully real, determinate entity" from which we abstract the idea of matter. Moreover, like the above example of color, the informed compound is not matter *plus* some object or property; rather, it is a *way of being* of the matter.

According to Peramatzis, the causal and explanatory power of form is what brings the object from the determinability of matter to the determinacy of the actually existing object. Form determines the structure, which applies to determinable matter; "the determinant *B* is directly causally responsible for the form-like item, *A*, and through *A*, indirectly operates on the matter-like item, *C*" (Peramatzis, 2018, p. 19). The result is a determinate compound. Matter is determinable, form is the ultimate determinant, and structure is the intermediate determinant. Structured matter is a determinate entity.

To elucidate these points, take for example a wooden hut. If wood is the matter for a hut, then the wood takes its arrangement from the hut-shape (the structure) and does not have any arrangement apart from that hut-shape. Without some sort of structure, some "*A*"—whether hut-shape, pile-shape, scattered etc.—the wood has no arrangement. Thus, "wood" alone is an abstraction because wood without any arrangement does not exist in reality. In contrast, wood in

hut-shape is a determinate entity. Form, the ultimate determinant, explains why the hut-shape exists as it does: the wood is arranged in such-and-such a way for the purpose of sheltering people from the elements. Thus, this end—sheltering people—is ultimately responsible for the wood's being in the determinate hut-shape.

3. Evaluating the Determination View of Hylomorphism

Determination has many properties that help to explain Aristotelian hylomorphism. For example, because determination is a form of non-conjunctive specification, determinables and determinates are *causally compatible*: being red does not causally compete with being colored, since being red is nothing more than a way of being colored (Wilson, 2021). If redness causes something, then so does coloredness. This point is useful: we want to be able to say that when a wolf's flesh and bones (i.e., the wolf's matter) cause something, the wolf causes it. Second, since we first perceive determinates and then abstract to determinables, viewing hylomorphism as similar to a determination relation allows form to retain priority over matter. Peramatzis also uses the determination schema to solve difficulties such as Akrill's Problem for hylomorphism.[1]

That said, hylomorphism and determination diverge in important ways, and Peramatzis is careful to avoid identifying the two concepts.[2] One difficulty in reconciling them comes from the "homonymy principle," Aristotle's claim that the matter of an organism is not the same informed (i.e., alive) as uninformed (i.e., dead)—a corpse is not strictly speaking a human body, and a

[1] Also known as the Modal Problem, Akrill's Problem consists in a dilemma: (a) matter must have an identity independent from form, but (b) given Aristotle's "homonymy principle," the matter of an organism is essentially informed (e.g., a severed hand is not a hand at all), thus matter is not independent. However, if matter is merely determinable, it cannot enter into any essential relations, so (b) is ill-formed (Havranek, 2020). For a fuller articulation of the Modal Problem, see Akrill (1972–1973).

[2] Peramatzis clarifies his claims to be that "the helpful logical structure of [determinables and determinates] partly applies to [the Causal-Explanatory Model]" and that "the notion of a determinant captures (part of) Aristotle's view of form as a 'this'… and as the cause in virtue of which matter is made something determinate" (2018, pp. 29, 30).

severed hand is not strictly speaking a hand.[3] If this is the case, then the increased specificity characteristic of determination does not apply (or at least not in the same way)—"alive" is not a specific mode of being a body, because there is no such thing as being a body without being alive. A second difficulty is that, in order for an object to be fully determinate, a physical object must fall on one side or the other of every possible disjunction. Put another way, an object must not only be specified as colored, but as red, not only as red, but as scarlet, etc., until we end up with a maximally specific color, the exact color of the object. But if nothing less than perfect specificity counts as full determinateness, then we strip from the concept of "form" one of its most important roles: to explain the similarity between different objects. In this picture, it seems that the determinable—imperfectly specific matter—accounts for similarity, not form.

4. Building a Solution

To evade these worries, we can turn to Anna Marmadoro, who similarly explains the matter-form relation as akin to (but not identical to) the relation between a determinable and determinate. However, she specifies the type of determination relation at play in the analogy as the relationship between the incomplete and the complete. Answering the question of what makes a substance one thing, she says:

> [I]t is the way the constituents come together that makes up the one. The determinable and the potential are fully integrated with the form that shapes them, not as subjects that come to possess the form, but as what is incomplete and is completed. (Marmadoro, 2013, p. 21)

In another place, Marmadoro spells out what she means by "completeness":

> This is the sense in which, alone, [the material parts of a substance] are *incomplete*. Complementary entities complete each other on account of a reason: what is *achieved* when they complement one another. The wholesomeness and oneness of the achievement

[3] "The eye is matter for sight, and if this fails it is no longer an eye, except homonymously, just like an eye in stone or a painted eye" (Aristotle, 1987, 412b20–23). That is, when the form (sight) is taken away from the matter (the eye), the matter is no longer the same—the dead eye is no longer an eye at all.

> is what licenses the description of the contributing entities as *incomplete*. (Marmadoro, 2013, p. 9)

The incompleteness of the matter, Marmadoro claims, is apparent in relation to what it achieves when completed. Taking the "achievement" to be the form, Marmadoro's claim seems to be that matter is definitionally or conceptually dependent on form, in a similar way to that in which a half-pizza is dependent on a complete pizza.

Inspired by Marmadoro's explanation, we can build up an account of matter and form that does not fall prey to the difficulties proposed in Section 3. First, consider that we can only conceive of any object as *one* to the extent that its parts interact with each other and in so doing act as a whole. For example, all of the bits of rock that compose the moon are arranged as a large sphere, and as that large sphere they perform certain activities: orbiting the Earth, creating tides, inducing wolves to howl, etc. It is the fact that these pieces of rock *act together* that enables us to call them a single thing, a unit. The stipulation that parts must act together to be called a "unit" separates units from what Jeremy Skrzypek calls "mereological monsters." These are objects such as "the object composed of my left thumb, my mother's knee, and the Empire State Building" (Skryzypek, 2017, p. 17). Such an object cannot be called a unit, since there is no activity that those three members of the set produce together. By "produce together" I mean not only that each of the members of the set contributes to the production of the activity but that they interact with each other to do so. Three people that independently donate to the same nonprofit, for example, would not constitute a "unit" as I have described it, even though they each contribute to the nonprofit's purpose; rather, they would be more properly termed a "group." A "unit" proper involves an interaction of parts—the parts act on and are acted on by each other. This interaction, then, either produces or constitutes a new activity.

Let me express the above points more precisely, focusing in on substances, artifacts, and other objects that we identify by the activities they produce (as opposed to phenomena that we identify by their efficient causes). In defining a unit, we start with an activity or capacity for activity—call it "*E*." Next, we identify the interaction of objects (say, "*I*") that produces *E* in the right way (a way that I will articulate in Section 5).[4] Finally, we identify the objects that play a role in *I* and that therefore "engage in" *E*.[5] Thus, we can define a "unit" as follows:

> UNIT: A unit is a set of objects for which an object is a member of the set if and only if it engages in *E* through *I*.

For example, in the case of a soccer team, we take an activity (trying to win certain soccer games), identify the structure or interaction that produces this activity (the positions: forwards, midfielders, defenders), and finally collect the objects that take part in this interaction (the players). The players, then, are the unit produced by the activity "trying to win these soccer games." Expressed differently, the players constitute the set composed of all and only the objects that engage in "trying to win these soccer games" (in the appropriate way).[6]

E is what unifies the set—it is the activity in terms of which the set is defined. Thus, *E* *explains* the unit. Accordingly, in keeping with the Causal-Explanatory Model, we can call *E* the

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[4] Notice that I said that we identify *the* interaction that produces *E*. But should I not instead have said that we merely identify *an* interaction that produces *E*? After all, it seems that some activities are caused or can be caused through many distinct interactions. But to substitute "the" for "an" would introduce an explanation for the unit other than *E*, namely, the selection of an interaction. In this case, *E* would no longer be exclusively responsible for the unit's determinacy, and since I intend to identify *E* with the form, this would be a major loss. The "True Grit" account of form that I describe in Section 5 will resolve this worry about many distinct interactions producing *E*.

[5] The identification of objects engaging in the activity could also consist of an identification of a section of a continuum that engages in the activity.

[6] Note that, in order to be a unit, the parts must together produce the very same instance of the activity—e.g., *this* capacity to cut or trying to win *these* games. To get the universal version of the form (e.g., the universal saw-ness that unites all saws, as opposed to the form of *this saw*) we simply remove the demonstrative adjective (so, instead of "*this* capacity for cutting of type Q," we have simply "the capacity for cutting of type Q"). A universal form can no longer define a unit, but this is not a problem—universals do not have matter anyway.

essence and form of the unit. The set of objects, the "unit," is the matter—it is the underlying "stuff" that *E* informs. *I*, the interaction of the parts that produces *E*, is the unit's structure.

5. An Objection and "True Grit"

The above schema, however, may appear to be far too broad. Take the activity of an infant's life. An objector may note that a vast number of things engage in the sustenance of the infant's life, from the infant's caretakers to the global economy; therefore, it would seem that the unit defined by the activity of the infant's life should consist of an enormous network of people and processes. Accordingly, the infant's life would be the essence not of the infant, but of this vast network.

This objection allows us to clarify a crucial aspect of a unit's essence and what it means for an object to engage in it. The above objector presumes that *E* is defined without reference to structure or matter. On this assumption, the unifying capacity of a saw (for example) is "cutting" conceived as an act of division independent of the blades and teeth or metallicity. After all, if form is the cause and explanation of the structure and matter, how could it be dependent on them?

Several contemporary hylomorphists, however, reject this "pure form" model that treats form as independent of matter and structure, including Peramatzis. In his article "What is a Form in Aristotle's Hylomorphism," Peramatzis argues for an alternative that takes a more down-to-earth view of form—he names this position "True Grit." According to True Grit:

> A form is essentially matter-involving; its own definition—not just that of the compound—refers to some appropriate sorts of material item. These last are in some sense genuinely "material"; they are not fully specifiable in terms of, or reducible to, formal, telic, functional, or other such items. (2015, p. 196)

On Peramatzis' account, the saw's activity would not a pure, mathematical kind of division, rather, it would be a tooth-and-blade kind of division, a metallic kind of division; similarly, infant-essence is not "infant-life" viewed in abstract, functional terms, but a flesh-and-bones-ish, infant-shaped life. This does not mean that the form itself is metallic or tooth-and-blade shaped, or even that form is partially defined in terms of the matter that it informs. Rather, form refers to "some appropriate *sorts* of material item" (emphasis added)—it refers to metal and tooth-and-blade shape as universals. Circularity is avoided because these universals have their own definitions. In this respect, form is analogous to a recipe. The recipe may include eggs, but the recipe is not dependent on the particular eggs that happen to go into the cake—the recipe includes eggs as a universal concept, not as a particular object.

If material and structural elements are part of the definition of the form, then the interaction that we pick out as producing the form (*I*) should also have reference to those elements. Consequently, what it means to properly engage in the activity will also refer to matter and structure. I will define "engaging in" *E* as *contributing to* E *in the material and/or structural ways for which* E *provides*. For example, for an object to properly engage in the production of infant-life, it must do so in a flesh-and-bones-ish, infant-shaped way, that is, it must be some sort of flesh and bones and it must be part of infant-structure. This is what differentiates the baby's organs from the atmosphere, economy, caregivers, etc., which help produce the baby's life through different structures and different material. The inclusion of material and structural elements in the form, and the consequent definition of what constitutes proper engagement in that form, is what prevents us from chalking up everything that has a positive effect on *E* as part of the unit *E* produces.

"True Grit" yields another important consequence. I claimed that if the form is "this capacity for metallic, tooth-and-blade cutting," then UNIT defines a set composed of all and only the objects that engage in "this capacity for metallic tooth-and-blade cutting." Equivalently for our purposes, the unit (i.e., the matter) is the metal that, in virtue of its tooth-and-blade structure, yields this capacity to cut. We gain nothing by including further elements in this definition, e.g., that the matter is metal or that it is in blade-and-tooth shape, since the form has already provided all of the relevant information. Thus, the matter of the compound, insofar as it is the matter of the compound, is entirely defined by the form.

6. Return to Determinables and Determinates

From this summit, we can see more clearly the matter's determinability and the way in which form determines it. Consider again the wooden hut example from Section 2. According to UNIT, we identify the matter of the hut by noting the purpose—sheltering people in a certain way—and consequently the interaction that accomplishes the purpose according to its terms: namely, some sort of hut-shape. The matter of the hut, then, will be the set of objects that participate in this structure: the wood of the walls, door, roof. Thus, as described above, matter is defined by the form—the matter of the house is defined as "the set of objects that engage in this instance of the capacity to shelter people in a certain way." What's more, however, form is also responsible for the very fact that the matter is one, unified entity at all: we are only able to think of the pieces of wood as one group because they come together to shelter people. In other words, the form is the grounds for the matter's being conceivable as one entity. Once conceived as such, we can then abstract from the hut and think of the pieces of wood on their own or in a different structure, such as in a pile or scattered; this is only possible, however, because of the actual,

informed state of the matter. *Form defines and furnishes the grounds for unity of the matter: it is in this way that form determines matter.*

Thus, matter is "determinable" in a distinctive manner. Just as "color" can be determined as red, yellow, blue, etc., the wood could exist determinately in hut-shape or pile-shape or scattered. But standard determinables (such as color or "being located in the U.S.") are equally dependent on the infinite species or determinates that fall under them: "being located in the U.S." is dependent on all of the infinite determinate locations in the United States, and "being colored" is dependent on all the infinite shades of color. In contrast, for hylomorphism the determinable matter depends on a single determinate—the informed compound—for its abstraction: to repeat, the fact that we have *this* mass of wood, rather than any other, is due to the fact that this wood is the wood used in the house. Without the hut-shape, the group is entirely arbitrary—without house-shape, *this particular matter* would not exist as one entity.

We can conclude, therefore, that the relation between matter and form is like that of a determinable that is particularly dependent on a single determinate, both for its definition and for its unity. This recalls Marmadoro's determinability of incompleteness: just as a half-pizza can only exist *qua* half-pizza because of the concept of a whole pizza, so the wood in the above example only exists as *this matter* because of the hut. In other words, matter is determinable but with a special dependence on the completed whole.

With this understanding, the worries regarding Peramatzis' schema are cleared up. First, the homonymy principle is upheld because matter remains dependent on form. Second, form does not need to answer every possible disjunction because form is not a species of matter, as a shade of color or a specific location is a species of "color" or "being located in the U.S." Rather, form is an activity—an activity that as a particular determines matter but which as a universal

(i.e., removing the demonstrative adjective from the definition—see footnote 6) can be instantiated in many different particular pieces of matter.

7. Conclusion

In this paper I have argued that form functions as determinant by defining and unifying the matter in the above-specified way. Matter, once defined and unified in this way, can be conceived as determinable in a way similar to that in which the incomplete is determinable: able to exist theoretically in many different ways but definitionally dependent on one way of being, namely, being informed. These conclusions are made possible by my central definition, UNIT, elaborated with the assistance of the "True Grit" view of form. Together, these arguments expand on the explanatory and determinative properties of form that Peramatzis' Causal-Explanatory Model proposes.

Bibliography

Akrill, J. L. (1972–1973). Aristotle's Definitions of "Psuche". *Proceedings of the Aristotelian Society, 73*, 119–133.

Aristotle. (1987). On the Soul. In Aristotle, & J. L. Akrill (Ed.), *A New Aristotle Reader* (D. W. Hamlyn, Trans.). Princeton, New Jersey, United States of America: Princeton University Press.

Havranek, H. (2020). Peramatzis Presentation. New Haven, Connecticut.

Marmadoro, A. (2013). Aristotle's hylomorphism without reconditioning. *Philosophical Inquiry, 36*(No 1-2).

Peramatzis, M. (2018). Aristotle's Hylomorphism: The Causal-Explanatory Model. *Metaphysics, 1*(1), 12–32. doi:https://doi.org/10.5334/met.2

Peramatzis, M. (2015). What is a Form in Aristotle’s Hylomorphism? *History of Philosophy Quarterly*, *32*(3), 195–216. http://www.jstor.org/stable/44076444

Skrzypek, J. (2017). Three Concerns for Structural Hylomorphism. *Analytic Philosophy*, 1–49.

Wilson, J. (2021). Determinables and Determinates. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Spring 2021 ed.). Retrieved from https://plato.stanford.edu/archives/spr2021/entries/determinate-determinables/