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THOMAS SATTIG

THE DOUBLE LIVES OF OBJECTS

An Essay in the Metaphysics of the Ordinary World

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of the Ordinary World*

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Preface

The ordinary world is populated with such objects as persons, tables, trees, and mountains. This volume defends a novel philosophical picture of ordinary objects, perspectival hylomorphism. The picture has a metaphysical part, quasi-hylomorphism, or q-hylomorphism, concerning the nature of ordinary objects, and a semantical part, perspectivalism, concerning the functioning of discourse about ordinary objects. The thesis, in a nutshell, is that ordinary objects lead double lives: they are compounds of matter and form; and since their matter and form have different qualitative profiles, ordinary objects can be described differently from different perspectives.

Perspectival hylomorphism carves a middle way between the two accounts that have dominated traditional metaphysics of material objects, namely, classical mereology and Aristotelian hylomorphism. It is a fundamentally classical-mereological framework with an Aristotelian twist. By combining some of their strengths, perspectival hylomorphism diminishes the distance between the two traditions. More importantly, however, it exhibits powers beyond the reach of its competitors. Neither the classical-mereological conception nor the Aristotelian conception divides an ordinary object into components with different lives. The possibility of qualitative divergence among a double-layered object's components is unique to perspectival hylomorphism.

Why believe that ordinary objects lead double lives? A philosophical account of ordinary objects should aim to preserve our common-sense conception of the latter. The task of saving the appearances, however, has proven difficult. For our familiar worldview faces a range of hard problems: it is riddled with paradox and clashes with plausible principles from metaphysics. The orthodox position in contemporary discussions is that these problems show our familiar worldview to be defective and in need of substantial revision. What recommends perspectival hylomorphism is that it does a better job than its rivals in preserving our folk conception of the world in the face of a range of such problems. The unified type of response in the proposed framework is compatibilist: seemingly inconsistent judgements about ordinary objects are really consistent because they manifest different perspectives on the same double-layered objects.

This volume has a straightforward structure: first the theory is developed, then it is applied. In Chapters 1 and 2, perspectival hylomorphism is introduced in its simplest version, which undergoes various refinements and extensions in

subsequent chapters. Chapter 1 contains the metaphysics: q-hylomorphism. Chapter 2 contains the metaphysical semantics: perspectivalism.

Chapter 1 opens with a review of the classical-mereological and the Aristotelian accounts of ordinary objects, thus setting the stage for the introduction of q-hylomorphism. While q-hylomorphism follows classical mereology in viewing complex material objects as mereological sums of smaller material objects, it denies that ordinary objects are material objects, where a material object is an object with a spatiotemporal location in a basic, non-derivative sense. Moreover, while q-hylomorphism follows Aristotelian hylomorphism in distinguishing between an ordinary object's matter and form, it construes forms as having a very different nature and at least a partly different function than Aristotelian forms. An ordinary object is a double-layered compound of a material object and a complex fact about this material object, which fact contains properties that realize an ordinary kind, such as *person* or *table*. The material object is characterized as the ordinary object's matter, and the complex fact as the ordinary object's individual form. The most significant aspect of this q-hylomorphic account is that the qualitative profile of an ordinary object's matter and the qualitative profile of the same object's form may diverge. In short, there may be hylomorphic divergence.

In Chapter 2, the metaphysical account is combined with a perspectival semantics of discourse about ordinary objects. The starting point is a psychological thesis: we may conceive of ordinary objects from different perspectives. We may take the sortal-sensitive perspective and think of ordinary objects in terms of properties that realize ordinary kinds. Or we may take the sortal-abstract perspective and think of ordinary objects in a primarily spatiotemporal way, regardless of which specific kinds they belong to. The next step is to link this psychological thesis with a semantical one: to a type of perspective on objects corresponds a mode of predication, a certain way of predicating a property of an object. By adopting the sortal-sensitive perspective on an ordinary object, a speaker employs the formal mode of predication when describing the object. By adopting the sortal-abstract perspective on an ordinary object, a speaker employs the material mode of predication when describing the object. When we ask what an object is like formally, we ask which properties are contained in the object's individual form, emphasizing the specific kind to which the object belongs. When we ask what an object is like materially, we ask which properties are instantiated by the object's underlying matter, abstracting from the object's kind. The key feature of perspectivalism is that it allows perspectival divergence: a shift in perspective, and hence in mode of predication, may yield a shift in truth value. Perspectival divergence is based on hylomorphic divergence: one and the

same object may have a given property from one perspective and lack it from another, because form and matter may encode different properties. In short, ordinary objects lead double lives.

In Chapters 3–8, perspectival hylomorphism is applied to a range of problems that threaten our common-sense conception of objects. Some of the problems constitute a threat from within, suggesting that our conception is internally inconsistent. Some constitute a threat from without, suggesting that our conception clashes with compelling metaphysical principles. Some of the problems have been staples in the history of metaphysics, some have appeared more recently, and some appear here for the first time. While Chapters 1 and 2 are presupposed by the rest and thus form the obligatory starting point, Chapters 3–8 can be read selectively and in a different order.

Chapter 3 is about paradoxes of coincidence that arise from temporal counterexamples to the platitude of common sense that distinct ordinary objects cannot fit into the same place at the same time. Chapter 4 is about paradoxes of fission and of intermittent existence, which arise from compelling counterexamples to the platitude that an ordinary object cannot have two exact spatial locations at the same time nor have two temporal beginnings. Chapter 5 is about three problems: a modal paradox of coincidence that arises from a modal counterexample to the principle that distinct ordinary objects cannot fit into the same place at all times at which they exist, the related grounding problem, concerning how modal properties of objects are grounded in non-modal properties, and the problem of specifying sufficient conditions of transworld identity. Chapter 6 is about the problem that the common-sense conception of objects seems to make the actual world indeterministic on mundane, *a priori* grounds. Chapter 7 is about problems arising from trying to make sense of ordinary objects' indeterminate mereological, spatial, and temporal boundaries, and about the related problem of the many, concerning how to get the intuitive number of ordinary objects right. And Chapter 8 is about the problem that according to common sense, ordinary objects cannot undergo variation in shape that transgresses the limits associated with certain kinds to which they belong, whereas according to a compelling metaphysical picture of ordinary objects' shapes in relativistic spacetime, they do undergo such radical variation.

Responses to these problems that rest on a single-layered account of ordinary objects, as proposed by classical mereology and Aristotelian hylomorphism, tend to be incompatibilist, forced to view the problems as uncovering a genuine inconsistency and to reject one or more compelling premises. Moreover, standard responses are disunified, using disparate keys to unlock different problems. Perspectival hylomorphism scores higher on both counts, offering a unified,

compatibilist response to the mentioned problems, which reconciles their seemingly inconsistent premises. The key that unlocks each problem is perspectival divergence: since ordinary objects are double-layered compounds permitting hylomorphic divergence, we may correctly describe the same object in different ways from different perspectives, employing different modes of predication. Many philosophical mysteries about ordinary objects dissolve once we realize that they lead double lives.

No attempt is made in this volume of saving ordinary objects from all philosophical threats having been identified in the literature. The focus is on the virtues of perspectival hylomorphism; and there are problems on which this position has no bearing. Nor is the volume designed to make a conclusive case for perspectival hylomorphism. Some rivals may have been missed and some misrepresented. The aim is to argue that when it comes to saving the world as we know it perspectival hylomorphism has a clear advantage with respect to a significant range of problems over its most salient rivals. Assuming that an equilibrium between metaphysics and common sense is desirable, this is a strong reason for taking the unorthodox position seriously.

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1

Q-Hylomorphism

Ordinary objects lead double lives: they are compounds of matter and form; and since their matter and form have different spatiotemporal and qualitative profiles, they may be described differently from different perspectives. This is the gist of perspectival hylomorphism, the philosophical picture of ordinary objects that will be presented and motivated in this volume. The present chapter lays the foundation by developing the metaphysical part of the picture, quasi-hylomorphism. The account of ordinary objects to be proposed stands on the shoulders of two classical approaches. It is with these that the story begins.

1.1 Classical Mereology and Aristotelian Hylomorphism

There is, let us assume, a basic sense of having a spatiotemporal location. A *material object* is located in space and time in this basic sense, and has various non-derivative physical properties, such as shape and weight. Let us also assume that there are composite material objects, which have smaller material objects as their spatial parts at the different times at which they exist. What is the nature of a composite material object?

1.1.1 *Classical mereology*

The position that dominates contemporary metaphysics of material objects and is now most immediately associated with David Lewis is that composite material objects are mereological sums, fusions, or aggregates, as construed by classical mereology, where the mereological sum, or aggregate, or fusion, is the only type of whole there is.¹ The two central principles characterizing mereological sums

¹ Classical mereology was developed by Stanislaw Leśniewski in the 1920s. Notable proponents, in addition to Lewis (1986, 1991), include Goodman and Quine (1947). Simons (1987) calls this family of systems ‘classical extensional mereology’.

are the principle of unrestricted composition, or universalism, and the principle of uniqueness of composition, or extensionality. Universalism concerns the existence of mereological sums. Extensionality concerns their identity. We can think of universalism as a condition concerning how a whole is generated from a plurality of objects. And we can think of extensionality as an explanation of what a given whole, generated in this way, fundamentally is. According to universalism, whenever there are some objects, there is at least one whole that they compose. Given the material objects a , b , and c , there is a new object, $a + b + c$, the sum of a , b , and c . Any plurality of objects compose a further object, no matter how the composing objects are arranged or what kinds they belong to. Moreover, according to extensionality, a whole x is identical with a whole y just in case x and y have the same parts. So the identity of a whole depends solely on *which* objects it is composed of, irrespective of any further qualitative facts about these objects. For example, the identity of the sum $a + b + c$ depends only on its being composed of a , b , and c . Since a mereological sum fundamentally depends only on which things it is composed of, not on what kinds these things belong to or on how they are related, a mereological sum is an *unstructured* whole. (More on mereological structure below.) We can say, furthermore, that when the identity of an object, x , is explained in terms of other objects, the y s, then the y s are *ontologically prior* to x . A mereological sum's parts are then ontologically prior to the whole.²

There are several versions of the classical-mereological conception of composite material objects, depending on whether the objects are cut into parts along their temporal dimension as well as along their spatial dimensions—that is, depending on whether they have temporal as well as spatial parts. According to three-dimensionalism, or endurantism, material objects lack temporal parts, whereas according to four-dimensionalism, or perdurantism, they have temporal parts. Four-dimensionalists standardly apply a temporally unrelativized notion of parthood—parthood *simpliciter*—to material objects, whereas three-dimensionalists standardly apply a temporally relativized notion of parthood—parthood at a time—to material objects.³

Here is a brief sketch of the standard four-dimensionalist, classical-mereological picture of complex material objects. First, various temporally unrelativized mereological notions may be defined in terms of the primitive notion of parthood *simpliciter*. For example,

² See Fine (1995: 283; 2010: 582).

³ For details, see Lewis (1986), Sider (2001a), Hawley (2001), and Sattig (2006).

x is a *proper part* of $y =_{\text{df}}$ x is a part of y and x is not identical with y .

x and y *overlap* $=_{\text{df}}$ some object z is a part of x and a part of y .

The x s *compose* $y =_{\text{df}}$ every x is a part of y , and every part of y overlaps an x .⁴

Second, four-dimensionalist mereological sums may be characterized by the following atemporal versions of the principles of unrestricted composition, or universalism, and uniqueness of composition, or extensionality:

Unrestricted composition (universalism): For any plurality of material objects, the x s, there is a material object that is composed of the x s.

Uniqueness of composition (extensionality): For any composite material objects a and b , a is identical with b iff for any pluralities of x s and y s, if a is composed of the x s and b is composed of the y s, then the x s are the same as the y s.

According to standard four-dimensionalism, temporally longer-lived sums are generated from temporally shorter-lived objects, just as spatially bigger sums are generated from spatially smaller objects. Just as the spatially small is ontologically prior to the big, so the temporally short-lived is ontologically prior to the long-lived. A spatially and temporally extended mereological sum is an unstructured whole, divisible into spatial and temporal parts in any which way.

This specification of mereological existence and identity conditions in purely atemporal terms stays quiet about a material composite's temporal profile, which concerns the composite's properties and relations at various times. Focusing on an object's mereological profile over time, standard four-dimensionalists view this profile as derived from the atemporal mereological profile of the object's instantaneous temporal parts: a has b as a part at t iff a 's temporal part located at t has b as a part *simpliciter*. Notice that this account of an object's temporal mereological profile allows a material object to change in its parts over time: a has different parts at different times iff a has different temporal parts, located at different times, with different absolute parts.

A three-dimensionalist version of the classical-mereological account of complex material objects may be obtained by taking the notion of parthood at a time as primitive (in the four-dimensionalist framework, this is a derived notion) and by temporally relativizing the above definitions and principles in the following straightforward way:

x is a *proper part* of y at $t =_{\text{df}}$ x is a part of y at t and x is not identical with y .

x and y *overlap* at $t =_{\text{df}}$ some object z is a part of x at t and a part of y at t .

⁴ As an alternative to taking the parthood relation as primitive, Kit Fine has proposed a formulation of classical mereology in a more general framework that takes the operation of summation as primitive instead (2010: Section V).

The *xs* compose *y* at *t* =_{df} every *x* is a part of *y* at *t*, and every part of *y* overlaps an *x* at *t*.

Unrestricted composition (universalism): For any plurality of material objects, the *xs*, existing at a time *t*, there is a material object that is composed of the *xs* at *t*.

Uniqueness of composition (extensionality): For any composite material objects *a* and *b*, *a* is identical with *b* iff for any times *t* and *t*^{*} and for any pluralities of *xs* and *ys*, if *a* is composed of the *xs* at *t* and *b* is composed of the *ys* at *t*^{*}, then the *xs* are the same as the *ys*.

On the three-dimensionalist picture, spatially bigger sums are generated from spatially smaller objects, but temporally longer-lived sums are not generated from temporally shorter-lived objects. No ontological priority is assigned to the short-lived. Accordingly, while spatially extended objects are composed of spatial parts, temporally extended objects are not composed of temporal parts.

Notice, further, how inflexible this three-dimensionalist variant of extensionality is with respect to a material object's temporal mereological profile (which is here viewed as underived). Since sameness of the parts of composite material objects *a* and *b* is necessary for the identity of *a* and *b*, a material object cannot change in parts over time; the parts go where it goes. If a material object *a* is composed of the *xs* at any time of its existence, then *a* is composed of the *xs* at all times of its existence.⁵ Second, since sameness of the parts of composite material objects *a* and *b* is sufficient for the identity of *a* and *b*, a material object can survive radical scattering; it goes where the parts go. If the *xs* compose material object *a* at any time, then they compose *a* when the *xs* are spatially close together, but also when the *xs* are scattered across the universe.

Friends of the classical-mereological conception of complex material objects typically hold that *ordinary objects*, such as persons and tables, are just composite material objects construed as mereological sums of smaller material objects. Among the many mereological sums of material objects that exist, by universalism, only very few are ordinary objects, in virtue of instantiating properties and relations that make them instances of certain ordinary kinds, such as *person* or *table*. So there are sums that are familiar and useful to us, such as tables, and hence count as ordinary objects, and there are sums that are too spatiotemporally scattered to be recognized by ordinary folks, such as the sum of my left arm and the moon. While ordinary mereological sums have properties and relations that realize ordinary kinds, such as *table*, the identity of a table does not depend on any table-realizers. In general, the identity of an ordinary object construed as a mere

⁵ The doctrine that sameness of parts is necessary for identity is known as mereological essentialism. This doctrine was popular among a number of 18th-century philosophers, including Leibniz (1982), Butler, and Reid (see the excerpts in Perry 1975). More recently the doctrine was defended by Chisholm (1976: App. B) and Van Cleve (1986).

sum does not depend on the instantiation of any kind-determining properties. Ordinary objects are not fundamentally characterized by any specific kinds; they have a kind-independent nature. The identity of a table depends solely on which material objects are its parts, irrespective of whether these parts are arranged tablewise. Such an arrangement is not constitutive of the table's nature.

Given a four-dimensionalist version of the classical-mereological account of composite material objects and a three-dimensionalist version, we need to distinguish the thesis that ordinary objects are four-dimensionalist sums from the thesis that they are three-dimensionalist sums. To most friends of classical mereology, the first thesis has seemed far more plausible than the second. Ordinary objects are typically capable of change in parts over time and incapable of surviving massive scattering. This expected mereological variability and unity of ordinary objects is incompatible with the three-dimensionalist version of extensionality stated above. The four-dimensionalist version, by contrast, allows for a derivative notion of temporary parthood that secures compatibility with mereological change and unity. This asymmetry, and related considerations, has moved most friends of the classical-mereological approach to adopt the four-dimensionalist package.⁶

Concluding this brief review, the classical-mereological analysis of ordinary objects may be summarized as follows:

Classical mereology

According to the classical-mereological conception, an ordinary object is an unstructured mereological sum of material objects, whose identity depends only on which objects are its parts, irrespective of which kinds these objects belong to and of how they are arranged.

1.1.2 Aristotelian hylomorphism

Aristotelian, or neo-Aristotelian, hylomorphism is an alternative conception of parthood and composition.⁷ As I understand this family of views, they have at least in common the rejection of the classical-mereological thesis that the unstructured mereological sum is the only type of whole there is, recognizing a structured type of whole completely absent from classical mereology. A type of whole can be characterized by various principles, among them a principle concerning how a whole is generated from a plurality of objects, and a principle concerning the conditions of identity for wholes.⁸ Universalism and

⁶ Though see Thomson (1983) for a three-dimensionalist alternative. See Koslicki (2008: chapter 2) for a valuable overview of various positions.

⁷ See Koslicki (2008) for an extensive discussion of different versions of hylomorphism.

⁸ Fine (2010: 569–70) speaks of formal and material principles governing a composition operation. Among the formal principles are those providing conditions of application, or existence, and

extensionality are the existence principle and the identity principle, respectively, by which unstructured mereological sums are (at least partly) characterized. The task of outlining Aristotelianhylomorphism may likewise be approached by characterizing a type of whole, though a structured one, in terms of these sorts of principle.

Aristotelianhylomorphists agree that there is a type of whole that is generated from a plurality of objects just in case these objects are arranged in a certain way and belong to certain kinds. There is, to put the idea with a familiar phrase, a type of whole that is generated from a plurality of objects under a certain ‘principle of unity’. A principle of unity is what ‘glues’ some entities together to compose a further entity. Such a principle of unity is the *form* of a whole generated in this way. The plurality of parts that are unified by such a principle is its *matter*. Following Harte (2002) and Koslicki (2008), we can think of an object’s form as providing ‘slots’ that are to be filled by objects that belong to certain kinds and that are arranged in a certain manner. An object’s matter, then, is the things that fill the slots. This is a condition of existence of a certain type of whole. The identity of a whole generated under a principle of unity is taken to depend on that principle—that is, the object’s identity depends on the object’s form. This dependence on a form with slots for certain kinds and arrangements of objects makes a hylomorphic whole a *structured* object. Furthermore, the type of whole characterized in this way is hierarchically organized. When a new whole is generated under a principle of unity from a plurality of objects that are themselves generated under their own principles of unity, then the new whole has a form with slots filled by objects that have their own forms with slots filled by objects that may have yet further forms, and so on. In this way, we get objects that are internally divided into levels, possessing more or less immediate parts. Mereological sums, by contrast, are flat, lacking such an internal division into levels.⁹

Aristotelianhylomorphists typically intend their conception of mereological notions to apply to a wide range of entities, abstract as well as material ones. Ordinary objects are among the things to which the picture is taken to apply. Thus, ordinary objects are structured wholes: their parts must exhibit a certain manner of arrangement and be of certain kinds, in order for the whole to exist, and the parts of these parts in turn must be unified. The principle of unity is the form of an ordinary object. Perhaps each specific kind is associated with its

those providing conditions of identity. These are the principles I focus on here. Among the material principles are ones providing conditions under which a whole possesses certain non-mereological properties, including spatiotemporal and physical ones.

⁹ See Fine (2010: 566–7) on mereological levels.

characteristic principle of unity, so that sameness of form is what qualifies objects as members of a certain kind. A tree, for example, has as its form a principle of unity associated with the kind *tree*; perhaps this form is shared by all trees. The objects that are unified in this way, namely the trunk, branches and leaves, are the tree's 'horizontal' parts, whereas it has as a merely 'vertical' part a certain quantity of wood. Since a tree may lose branches and leaves, its matter is variable over time, whereas its form is constant. Note that while the classical-mereological account of ordinary objects is typically combined with four-dimensionalism about material objects' spatiotemporal profile, as pointed out earlier, the Aristotelian-hylomorphist account is typically combined with three-dimensionalism, and hence ordinary objects are here viewed as lacking temporal parts.

To get a glimpse of how this picture might be developed, let us briefly consider Kit Fine's (1999) theory of rigid and variable embodiment. The theory of rigid embodiment characterizes a type of material whole that is incapable of varying in its parts over time, whereas the theory of variable embodiment characterizes a type of whole that is capable of doing so. Fine's strategy is to introduce two primitive composition operations that generate a material object from a plurality of objects under certain conditions.¹⁰ While these operations are *sui generis*, various postulates are provided to yield an understanding of how the operations behave. I shall here focus on Fine's postulates concerning existence and identity.

The operation of rigid embodiment, designated by $'/'$, generates a whole, $a, b, c, \dots /R$, from a plurality of objects, $a, b, c, \dots$ and a condition, corresponding to what I earlier called a principle of unity, R . Fine's existence postulate settles when such a rigid embodiment exists: the rigid embodiment $a, b, c, \dots /R$ exists at a time t iff R holds of $a, b, c, \dots$ at t (Fine 1999: 66). That is, a rigid embodiment exists at a time just in case a certain plurality of objects exist at the time and are arranged in the way specified by R at the time. Moreover, Fine's identity postulate specifies an identity condition for rigid embodiments: the rigid embodiments $a, b, c, \dots /R$ and $a', b', c', \dots /R'$ are the same iff $a = a', b = b', c = c', \dots$ and $R = R'$ (Fine 1999: 66). By this condition, the identity of a rigid embodiment depends on which objects are its immediate parts as well as on its form. Rigid embodiments are mereologically unchangeable objects with nothing but atemporal parts.

Since ordinary objects are typically capable of change in parts, they are not strict embodiments, but rather, variable ones, though the notion of a strict embodiment plays a role here, as well. The operation of variable embodiment, designated by $'//'$, generates a whole, $/F/$, from a principle F , which Fine views as a 'function' from times to objects (Fine 1999: 69). The various objects picked out by

¹⁰ The general framework for dealing with composition operations is provided in Fine (2010).

F at various times are described as the ‘manifestations’ of the variable embodiment $/F/$ (Fine 1999: 69). The variable embodiment $/F/$ exists at a time t iff it has a manifestation at t ; and the variable embodiments $/F/$ and $/G/$ are the same iff their principles F and G are the same (Fine 1999: 70). The identity of a variable embodiment does not depend on any of its particular parts at a any time. What its identity depends on is only its principle of variable embodiment, or its form, which may determine different pluralities of parts, or different matter, at different times.

For illustration, consider Fine’s example of a car. It is a variable embodiment $/F/$, whose form, F , has different manifestations at different times. What are these manifestations? According to Fine (1999: 69), they are rigid embodiments. Each manifestation of the car’s form at a time is a rigid embodiment generated from various familiar car-constituting objects—an engine, a chassis, wheels, and so on—and their carwise arrangement. These objects are atemporal parts of the rigid embodiment picked out by the car’s form at a time t , and so the objects are temporary parts of the car at t . They are the car’s ‘major’ parts at t . And since a rigid embodiment with different atemporal parts may be picked out by the car’s form at another time, the car may change in parts over time. Finally, as the car’s major parts are themselves mereologically changeable variable embodiments, the car is a hierarchically structured object.

Aristotelian hylomorphists differ on a range of questions, including the following. First, they differ on whether a whole is a composite of matter and form, having the form itself literally as another part, along with its material parts. Fine holds that forms are parts of structured wholes as well as unifiers of these wholes, emphasizing that there is substantive work to be done by this genuinely Aristotelian feature.¹¹ Mark Johnston, by contrast, holds that forms play a unifying role but are not themselves parts of wholes.¹² (The choice is relevant to the question whether ordinary objects are material objects in my technical sense. If the car does not have a form as a part, then the car may be viewed as having a non-derivative spatiotemporal location. But if the car does have a form as a part, and if this form is an abstract entity, then the car is likely to have a spatiotemporal location only in a derivative sense—that is, it will have to inherit its spatiotemporal location from the location of its matter.¹³) A second disputed question is

¹¹ See Fine (1999: 67) and Koslicki (2008). I shall address one motivation for this mereological aspect of Aristotelian hylomorphism in my discussion of the grounding problem in Chapter 5.

¹² See Johnston (1992, 2002, 2006).

¹³ Cf. the existence-postulates and location-postulates in Fine’s theory of rigid and variable embodiments; Fine (1999).

whether forms are individualized, playing a role in the individuation of distinct instances of the same kind, or whether forms are shared among all instances of a kind. Some may view each particular car as having its own form, while others view all cars as having a common car-form.

A third issue concerns which principles of unity are admitted to generate material wholes. According to Fine, there is no privileged class of properties or relations to which the operation of rigid embodiment is sensitive, while others are left out. Likewise, there are no privileged functions from times to objects to which the operation of variable embodiment is sensitive. The result is a plenitudinous ontology that even outstrips that of classical mereology: ‘for each such object of the mereologist, there will correspond a multitude of rigid embodiments, differing in their choice of components or relational principle, and a multitude of variable embodiments, differing in their actual and possible manifestations’ (Fine 1999: 73). Other Aristotelian hylomorphists incline towards a more restrictive ontology of material objects, maintaining that only a restricted class of principles of unity have the privileged status of generating structured wholes. The ontologically privileged complex objects may or may not be seen to be just the objects recognized by common sense and science.¹⁴

Fourth, while Aristotelian hylomorphists agree that there is a structured type of whole—or, to speak with Fine, a composition operation generating structured wholes—there is disagreement over whether this is the only type of whole, or the only type of composition operation. According to the mereological monist, there is only a single basic type of whole or composition operation, where a type of whole is basic if it is not definable in terms of other types of whole. According to the mereological pluralist, there are different basic types of whole or composition operations.¹⁵ Classical mereology is standardly framed as a monist position. Aristotelian hylomorphism could likewise be framed as a monist position, diametrically opposed to monist classical mereology.¹⁶ Fine, however, is a radical mereological pluralist, recognizing ‘an infinitude of forms of composition’ (2010: 576), including the slim operation of summation, generating unstructured objects, as well as the more ‘substantive’ operations of rigid and variable embodiment (Fine 2010: 576), generating structured objects.

¹⁴ For a restrictivist position, see Koslicki (2008: 171). For a common argument in favour of plenitude, see Section 1.3.1.

¹⁵ These notions are Fine’s (2010: 561–2).

¹⁶ Koslicki (2008: 167) is at least a mereological monist about material objects.

Concluding this rough outline, the Aristotelian-hylomorphist analysis of ordinary objects may be summarized as follows:

Aristotelian hylomorphism

According to Aristotelian hylomorphism, an ordinary object is a structured whole, whose identity depends on its “major” parts’ being arranged in a certain way and on their belonging to certain kinds. The principle of unity determining a characteristic manner of arrangement of certain kinds of object is the ordinary object’s form; the plurality of ‘major’ parts is its matter.

1.1.3 Intuitions of mereological structure

Aristotelian hylomorphism about ordinary objects is a bold account that only a minority of contemporary metaphysicians are willing to endorse. I suppose that the main target of scepticism is the mysterious nature of structuring composition operations, and, correspondingly, of forms of complex objects. What I find most mysterious about these operations is how they can be sensitive to very specific, high-level kinds of object and manners of arrangement. Suppose that the primitive operation of rigid embodiment applies to material objects *a*, *b*, *c*, and *d* and the condition that *a*, *b*, and *c* are aluminium legs, that *d* is a wooden top, and that *a* through *d* are arranged in accordance with Mies van der Rohe’s blueprint, thereby generating a particular table (or perhaps only a particular manifestation of a table). The generated table is a structured object possessing a form with slots for objects of specific kinds in a specific arrangement. What explains the fact that it matters to the application of the operation of rigid embodiment that *a*, *b*, and *c* are aluminium legs, that *d* is a wooden top, and that *a* through *d* are arranged according to van der Rohe’s design? What is it about aluminium legs that helps generate new objects? Generating a new object is a metaphysically robust job. When a mechanism with this job is tuned to specific, high-level properties and relations, we expect an explanation of the mechanism in more basic terms—that is, we expect an explanation in terms of more natural properties and relations. For how can something this fundamental be sensitive to something this derivative? Correspondingly, how can metaphysically deep forms have slots for metaphysically shallow kinds? No answer is provided. These are assumed to be primitive aspects of the composition operation and its associated forms. What holds for rigid embodiment, holds for variable embodiment and for other structuring composition operations Aristotelian hylomorphists have postulated: their sensitivity to highly specific and fairly unnatural kinds and manners of arrangement cries out for an explanation. Without an account in more fundamental terms, these composition operations remain objectionably mysterious,

appearing too stipulative for metaphysicians impressed by the lean elegance of the classical-mereological operation of summation to accept.¹⁷

The price of Aristotelian hylomorphism, then, is considerable. In order to get a sense of why it might be worth paying this price, I shall review how Fine supports the approach. Fine's central motivation for rejecting the classical-mereological account of ordinary objects in favour of a hylomorphic one is that the account is insufficient to capture certain intuitions of mereological structure about ordinary objects.¹⁸ Consider, as a first case, Michelangelo's David. This statue has various familiar parts, including the left, bent arm. Moreover, the statue occupies the same spatial region as a certain block of marble, which seems to be distinct from the statue, as it was there before Michelangelo created David from it. The relationship between these two spatially coincident objects will be the subject of Chapter 3. What concerns me here is the following question: Is David's left arm also a part of the block of marble? It seems not. Intuitively, the block has the same microparts as the statue, but the block does not have arms. We admire the statue, not the block. This is so, partly because we admire the realistic portrayal and harmonic composition of its parts. If these were parts of the block, we would admire it too. But we do not.¹⁹ This is an intuition of mereological structure. An object of a given kind only has parts of certain kinds. Not any way of slicing the spatial region of the object hosts a corresponding part of the object. In the present case, the arm is a part of the statue but not of the spatially coextensive block of marble. The block of marble, to put it with Fine (1999: 73), is a 'relatively unstructured version of the [statue] just as the set {a, b, c, d} is an unstructured counterpart of the set {{a, b}, {c, d}}'.

The classical-mereological conception of ordinary objects lacks the resources to handle this intuition of mereological structure. On this conception, an ordinary object is an unstructured mereological sum of material objects. For any way of slicing up the spatial region exactly occupied by an ordinary object at any time, the object has a spatial part that exactly occupies that part of the region, irrespectively of the kind to which the part belongs. The arm is, on this conception, a part of the block of marble just as it is a part of the statue.

¹⁷ The worry does not concern arbitrariness. The question is not why a composition operation should be sensitive to these kinds and arrangements but not to others. Fine does not face a problem of this sort, since there are no privileged kinds and arrangements to which rigid and variable embodiment are sensitive. The worry is, rather, why primitive composition operations should be sensitive to specific, high-level kinds and arrangements in the first place.

¹⁸ See Fine (1999: 62–5). Fine's criticism is endorsed by Koslicki (2008: 72–5).

¹⁹ Cf. Fine (1999: 73, 2003: 198 n.5). Similarly, an organism has a heart as a part (at a time), while the aggregate of cells constituting the organism does not.

For a second case, let us explicitly assume the standard combination of the classical-mereological account of ordinary objects with four-dimensionalism. Recall that standard four-dimensionalists view an ordinary object's temporal mereological profile as derived from the atemporal mereological profile of the object's instantaneous temporal parts: *a* has *b* as a part at *t* iff *a*'s temporal part located at *t* has *b* as a part *simpliciter*. Now suppose that my car has a certain wheel as a part at time *t*. Suppose also that there is a spacetime region, *R*, that has a part in the present occupied by the car's wheel as well as a part in the past occupied by Socrates. By universalism, there is an *R*-object that is the mereological sum of all objects contained in *R*. This object has, among others, the wheel and Socrates as parts *simpliciter*. Notice that the temporal part of the *R*-object at *t* is identical with the temporal part of the wheel at *t*. Since this temporal part is an absolute part of the car's temporal part at *t*, it follows that the *R*-object is a part of my car at *t*. But it is hard to accept that an object that contains Socrates as a part is a part of my car at any time.²⁰ As in the case of David, this intuition concerns the mereological structure of an ordinary object: the kind to which an object belongs is relevant to whether it is a part. It is a major defect of the four-dimensionalist classical-mereological conception of ordinary objects that it is blind to this kind-sensitive mereological structure. Note that it will not help to point out that classical mereologists are used to having objects in their ontology that ordinary speakers fail to recognize—this is a standard problem for any plenitudinous ontology. For it is one thing to say that there are highly exotic objects that we never dreamed of, but quite another thing to say that these are parts of familiar objects. Since we are experts on ordinary objects, it would be rather surprising if we had misrepresented their mereological profile to that extent.

Aristotelian hylomorphists have no trouble accommodating the intuitions of mereological structure under consideration. As we saw, they can view the form of an object as determining not only a manner of arrangement of other objects, but also as determining what kinds of object can enter into that arrangement.²¹ Accordingly, the Aristotelian can say that we can build a table from four legs and a top, but we cannot build a piece of wood from these things, because the kind *table* has associated forms with slots for legs, whereas the kind *piece of wood* does not. Similarly, a block of marble lacks arms, since its form lacks slots for objects of the kind *arm*, and my car does not have an object partly constituted by Socrates as a part, since its form lacks a slot for such a 'monster'. The ability to capture these intuitions of mereological structure is a big point in favour of

²⁰ This is a version of Fine's 'monster objection', in Fine (1999: 64–5).

²¹ See Fine (1999: 72, 2010: 576), Koslicki (2008: 169).

analysing ordinary objects as compounds of matter and form. The Aristotelian-hylomorphist understanding of form as structuring objects is the standard one. As we will see, however, there is an alternative understanding of form.

1.2 Material Objects, Sortals, and K-paths

The metaphysical analysis of ordinary objects to be developed in this essay differs substantially from both the classical-mereological and the Aristotelian-hylomorphist analyses, and yet stands on their shoulders. The view can be described as a middle way between the two. It is a fundamentally classical-mereological framework with an Aristotelian twist. Or, to locate it by recourse to the received views' contemporary figureheads, it is a Lewisian theory that takes a Finean turn. It combines some of the classics' key features, thereby combining their strengths and diminishing the distance between the two traditions. More importantly, however, it exhibits unique powers beyond the reach of its competitors. To foreshadow somewhat, the account follows classical mereology in viewing complex material objects as mereological sums of smaller material objects, but denies that ordinary objects are material objects. Moreover, it follows Aristotelian hylomorphism in distinguishing between an ordinary object's matter and form, but construes forms as having a very different nature and at least a partly different function than Aristotelian forms. In the remainder of this chapter, I shall develop the foundations of this unorthodox, non-Aristotelian variant of hylomorphism about ordinary objects.

Ordinary objects will be metaphysically analysed as compounds of material objects and K-paths, of matter and form. I shall begin with a metaphysical account of material objects.

1.2.1 *Material objects*

A material object, as I use the label, is an object with a non-derivative spatio-temporal location and with non-derivative physical properties. I shall assume that there are composite material objects. On the question of the nature of composite material objects I side with the classical-mereological conception, but deny that ordinary objects are identical with such material objects. In what follows, I will develop an account of ordinary objects as built up from material objects understood in the way of classical mereology.

As pointed out in Section 1.1, the classical-mereological conception of composite material objects comes in different versions, a three-dimensionalist one, according to which material objects lack temporal parts, and a four-dimensionalist one, according to which they have temporal parts. The account of ordinary