Amphibian Properties

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To my parents

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Abstract

This thesis defends a systematic ontology based on amphibians. The first two chapters—Part I—develop what I take to be the core theory of amphibians. Chapter 1 is largely devoted to an investigation of the particular-universal distinction: I begin by introducing dominant conceptions of the distinction and then explain why the possibility of amphibians generates serious difficulties for them. I argue that a satisfactory conception can be achieved only if amphibians are regarded as constituting a fundamental category distinct from universals and tropes. In the remainder of the chapter, I outline an amphibian-based account of attribute agreement and present several initial cases in its favour.

In Chapter 2, I defend a novel ontological account of objects, according to which an object is nothing but a bundle of amphibians. I argue that bundle theorists should prefer taking the bundled properties as amphibians rather than universals or tropes, since the latter views are defective in accounting for scenarios involving symmetrical universes. By contrast, the amphibian-based bundle theory not only accommodates such cases but also has the merit of providing a parsimonious account.

In Part II, the amphibian-based ontology is extended to develop accounts of persistence and dispositions. In Chapter 3, I extend the notion of an amphibian to cover not only synchronically but also diachronically repeatable and duplicable properties, and argue that adopting this notion enables us to account for various cases of persistence in ways that are more plausible than those based on universals and tropes.

Finally, in Chapter 4, I defend a version of the 'property-first' account of dispositions which takes dispositional properties to be amphibians. Focusing on the issue of how dispositionalists should account for the intrinsic directedness of dispositional properties, I propose a novel version of the 'two-tier' solution to the Meinongian objection by accepting a distinction between type-level and token-level amphibians. I argue that this amphibian-based version has the merit of offering a genuine one-category ontology and therefore has the virtue of qualitative parsimony.

This thesis contains 52,833 words.

Introduction

This thesis aims to develop and defend a systematic ontology based on *amphibians*: properties that are both repeatable and duplicable and constitute a fundamental category distinct from *universals* and *tropes*. Given this aim, I argue that a theory of amphibians can be put to various philosophical work, including explaining attribute agreement and the ontological status of objects, and can be extended to yield accounts of persistence and dispositions. A recurring strategy in the defence of this view is to argue that amphibianism is at least as plausible as, and in important respects more advantageous than, competing views based on universals and tropes. Accordingly, for those who accept the existence of properties, there are substantial reasons to take properties to be amphibians.

Amphibians are by no means a familiar philosophical posit, and it is therefore necessary to begin by clarifying their nature before explaining how they can be put to work in the metaphysical domains mentioned above. In particular, I begin by explaining in what sense they form a fundamental category of property distinct from universals and tropes. This is important, as such a view may initially appear implausible: one might wonder how anything could plausibly be regarded as neither a particular nor a universal, given the widespread assumption that the distinction between particulars and universals is both mutually exclusive and jointly exhaustive. This suggests that an examination of competing conceptions of the particular-universal distinction, together with the associated concepts of universals and tropes, provides an appropriate starting point for the study.

But before I undertake this task, let me briefly clarify some terminology. Throughout this thesis, I follow a number of philosophers—notably Lowe (2006, 69)—in using the term 'entity' in its most general sense, as a semi-technical term interchangeable with the more colloquial term 'thing', to refer to anything whatsoever that there is or could be. Some philosophers use the term 'object' in the same way, taking it to refer to any member of any ontological category. However, since one of the main goals of this thesis—namely, the central theme of Chapter 2—is to defend a version of the bundle theory of objects, which typically treats objects as constituting a subcategory of entities, I instead use the term

'object' in a more restrictive sense, to refer only to entities such as tables and chairs, that is, entities that can bear or possess properties.

Objects so understood are sometimes referred to as 'concrete particulars' or 'individual substances'. For various reasons, however, I avoid these terms. First, as I explain in Chapter 2, some bundle theorists take objects to be *universal* in character, capable of being located at multiple places simultaneously. Thus, it would be inappropriate to adopt the seemingly biased term 'concrete particular', which may suggest that objects are particulars rather than universals. The same concern applies to 'individual substance', if individuality is taken to imply particularity. There is also an independent reason to avoid the term 'substance' here, which is sometimes used in an even more restricted way, denoting only independently existing or fundamental objects. As should be clear, I do not use the term 'object' in this way, but rather take it to cover all kinds of objects, whether concrete or abstract, particular or universal, fundamental or derivative.

Contrasted with 'object' is the term 'property', which I take to be interchangeable with 'quality', 'attribute', 'characteristic', and 'feature', referring to entities that can be borne or possessed by objects. As indicated, one central strategy I adopt in defending a theory of amphibians is to argue that it is preferable to those based on universals or tropes when it comes to explaining certain intuitive phenomena or resolving certain metaphysical puzzles. The reasoning behind this is that I take universals, tropes, and amphibians to share a common ontological footing: I take them to perform broadly similar theoretical roles within a systematic ontology, such as that of conferring qualitative natures to objects that bear or possess them. Accordingly, I require a term to cover them, and 'property' seems adequate here.[1]

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[1] The object-property distinction, then, can be formulated as a distinction between property-bearers and quality-conferrers, or, less figuratively, as a distinction between entities with the capacity to bear or possess something and entities with the capacity to be borne or possessed by something. Intuitive though it may be, this view appears to face a difficulty: a property that possesses further properties would thereby be classified as an object. Yet it seems plainly wrong—or even a 'category mistake'—to take any property to be an object (Lowe 2006, 70).

As it turns out, in a number of places—primarily in Chapter 4—it is important to distinguish between what I call 'type-level properties' and 'token-level property-instances'. For ease of exposition, I sometimes abbreviate these as 'properties' and 'property-instances' respectively. Although this practice should not generate confusion in the relevant contexts, it should be borne in mind that it deviates from the main usage and takes the term 'property' to have a different reference. For example, one trope-based view to be discussed treats classes of tropes, rather than tropes themselves, as properties, while tropes themselves as property-instances.

Finally, when I say that objects 'bear' or 'possess' properties, I use these terms in a theoretically neutral way, meaning no more than that the objects in question in some sense have those properties, without presupposing any particular account of properties, objects, or the having of properties by objects.

Let us now turn to the first goal of the thesis, namely to explain how one can plausibly maintain that amphibians constitute a fundamental category of property distinct from universals and particulars while at the same time upholding a satisfactory conception of the particular-universal distinction.

There are several possible responses. First, one may simply reject the possibility of higher-order properties. Second, one may modify our concepts of *object* and *property* so that, while both objects and properties can bear or possess something, only properties—and not objects—can be borne or possessed by something (Lowe 2006, 72). Finally, one may deny that the object-property distinction is mutually exclusive and take properties possessing higher-order properties to be both objects and properties. I am, in fact, sympathetic to this route, since it can preserve the intuition that objects are property-bearers and properties are quality-conferrers, while not precluding the possibility of higher-order properties. However, since all of these responses are compatible with treating universals, tropes, and amphibians as properties, I do not adopt any of them in what follows, beyond assuming that the problem of higher-order properties can be resolved in some way.

Part I

The Core Theory

1

Properties

1.1 Amphibians and the Particular-Universal Distinction

The distinction between particulars and universals is thought to be one of the most fundamental ontological distinctions. It is not clear, however, what this means and how the distinction should be drawn. According to a stronger view, the distinction is fundamental in the sense that it marks off a joint in reality such that every possibly existing entity either belongs to the category of particular or universal, but not both—that is, the two categories are mutually exclusive and jointly exhaustive.[2] To meet this requirement, it is typically proposed that the particular-universal distinction should be characterised as a distinction between the *F*s and the non-*F*s, where *F* is some capacity of entities. For instance, a naïve Aristotelian conception says that only universals but not particulars are capable of being wholly present in distinct places at the same time. Since nothing both has and lacks the capacity to be multiply located, and everything either has or lacks that capacity, it satisfies the requirement that the two categories are mutually exclusive and jointly exhaustive.

This view, though widely assumed, is far from uncontroversial. MacBride, for instance, has argued in various places that conceptions assuming it are vulnerable to counterexamples and faces a range of further objections (1998b, 1998a, 1999, 2004, 2005, 2009). I agree with MacBride that these conceptions of the particular-universal distinction are defective, though, as we shall see, my main reason for this is different and turns on the possibility of amphibians. If my arguments are successful, what emerges is a novel conception according to which the particular-universal distinction fails to be jointly exhaustive, while remaining fundamental in the weaker sense that there are two ontological categories, *universal* and *particular*, each of which has a distinctive metaphysical role played exclusively by its

[2] Lowe, for instance, explicitly adopts this view (2002, 345; 2004, 302; 2006, 38).

members. Given this aim, I now turn to the dominant accounts and explain what is wrong with them.[3]

1.1.1 The instantiation-based conceptions

The first cluster of conceptions we need to consider is what Ehring (2011) calls the 'instantiation-based' accounts, which attempts to characterise the particular-universal distinction by appeal to some features associated with the notion of *instantiation* or *exemplification*. These include the *numerical* conception, the *completeness* conception, and the *exemplification* conception, which can be summarised as follows:

The numerical conception.

Particulars can occur in atomic states of affairs with varying numbers of constituents, whereas universals can only occur in atomic states of affairs with a fixed number of constituents.

The completeness conception.

Particulars are *complete* entities that exist independently of other particulars, whereas universals are *incomplete* entities that depend for their existence on particulars.[4]

The exemplification conception.

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[3] Of course, the conceptions to be discussed do not cover all conceptions in the literature, *a fortiori* all logically possible conceptions. My goal is not to rebut all possible conceptions and argue that my own account is the only viable one. Instead, what I wish to do is simply to show that through some considerations about amphibians, a more flexible approach which abandons an assumption often associated with traditional accounts should at least be seen as a serious contender.

[4] The idea is that universals are 'gappy' entities, waiting to be 'filled' or 'saturated' by 'non-gappy' particulars in order to exist; by contrast, no such requirements are placed on particulars (MacBride 2005, 604; Ehring 2011, 21-22).

Particulars have the capacity to exemplify something yet lack the capacity to be exemplified by something, whereas universals have the capacity to be exemplified by something yet lack the capacity to exemplify something.[5]

These accounts have some intuitive appeal—at least for supporters of the traditional theory of universals. Consider the case of an object *a* that has a monadic property *F*. According to universal theorists, such a case involves a particular *a* instantiating a universal *F*. The entity *a* counts as a particular according to the above instantiation-based conceptions: it can occur in atomic states of affairs, such as *Fa* and *aRb*, that have varying numbers of constituents; it is a complete entity existing independently of other particulars; it can exemplify universals yet cannot be exemplified by anything. On the other hand, *F* counts as a universal: it can only occur in atomic states of affairs, such as *Fa* and *Fb,* that have two constituents; it is an incomplete entity depending for its existence on some particulars; it can be exemplified by particulars yet cannot exemplify anything.

Although the instantiation-based accounts work perfectly within a traditional theory of universals, they faces a variety of difficulties. MacBride (2005), in particular, has offered an extensive discussion of potential difficulties for these accounts. For our purposes, I shall focus on a particularly damaging objection proposed by Ehring (2011), namely that these conceptions cannot accommodate cases involving *tropes*, that is, properties that are particulars. Tropes are entities that (i) can only occur in atomic states of affairs with a fixed number of constituents, (ii) depend for their existence on particulars that possess them, and (iii) can be exemplified by something yet cannot exemplify anything (2011, 20-24). But given the instantiation-based accounts, they would be wrongly classified as universals. The problem here, as Ehring explains, arises from the fact that the instantiation-based accounts

[5] If there could be higher-order universals, then both particulars and universals have the capacity to exemplify something. Given this, the exemplification conception can instead be formulated as follows: universals, but not particulars, have the capacity to be exemplified by something.

'assume that all and only properties are universals, and that whatever distinguishes properties from [objects] will be what distinguishes universals from particulars' (Ehring 2011, 24). Since a plausible conception should not assume a particular view on whether properties are restricted to universals and whether particulars are restricted to objects, such conceptions are doomed to fail.

Now, proponents of the instantiation-based conceptions might reply that Ehring's argument rests on a requirement of the particular-universal distinction that they need not accept, namely, that the conception ought to be applicable to different ontological systems. They can agree that the above instantiation-based accounts would fail *if* they were intended as conceptions that apply to both the universal theory and the trope theory. Yet what they claim is no more than that a plausible account can be given of an ontology that postulates nothing but universals and objects instantiating them.

However, here I side with Ehring in holding that a plausible conception should apply across different ontological systems. Indeed, given a particular ontology, the particular-universal distinction may coincide with several different distinctions within that ontology. Proponents of different ontological systems might therefore speak loosely about 'particulars' and 'universals' when what they really mean are the corresponding kinds of entity in their views. But that by no means imply that they do not need a plausible conception of the particular-universal distinction applicable to different ontological systems. As Ehring nicely puts it, even a theory of tropes that denies the existence of universals 'requires a viable distinction between universals and particulars. Otherwise, its claim that there are properties but they are particulars, not universals, will have no substance' (2011, 19). In the same way, proponents of an amphibian-only theory, such as I myself, require a plausible account of the particular-universal distinction that applies across different ontological systems, for otherwise the claim that properties are amphibians as opposed to universals and tropes will have no substance. In light of this, in what follows I shall assume that what we should after is a conception applicable to different ontological systems.

Returning to the problem for instantiation-based conceptions. My diagnosis is that, while the three instantiation-based accounts discussed above do seem to capture a real ontological distinction, what they capture, or come very close to capturing, is not the particular-universal distinction, but rather the object-property distinction. This is backed by Ehring's observation that what they take to be definitive features of universals are also applicable to tropes: both universals and tropes are, for instance, entities that can be exemplified by something yet cannot exemplify anything. I would add that such features are also applicable to amphibians. What this suggests, then, is that despite what these formulations are initially taken to be, we'd better not regard them as candidates for the particular-universal distinction, but rather as candidates for a different ontological distinction, namely, the object-property distinction.[6]

1.1.2 The repeatability conception and the duplicability conception

Let us now turn to what I take to be two 'real' approaches to the particular-universal distinction. First, many have attempted to characterise the distinction by whether entities could have repeated occurrences. Universals but not particulars are said to be those that are *repeatable* according to this conception. I will call this the 'repeatability' conception. Depending on what it takes to be repeatable, there are at least two ways to implement this approach:

Multiple Location (ML).

For any universal *U*, *U* is *repeatable* in that there could be distinct locations *l* and *l** such

[6] If proponents of these conceptions insist on treating them as candidates for the 'particular-universal distinction', perhaps on the grounds that there is historical pedigree for doing so, I am content to grant them the term 'particular-universal distinction' as they understand it and to use a different label for the views to be discussed below. What matters here is that the two distinctions are clearly distinguished.

that (i) *U* is wholly present in *l* and (ii) *U* is wholly present in *l*★. By contrast, for any particular *P*, *P* is *unrepeatable* in that there could not be such *l* and *l*★.

Multiple Instantiation (MI).

For any universal *U*, *U* is *repeatable* in that there could be distinct entities *x* and *y* such that (i) *x* is an instance of *U* and (ii) *y* is an instance of *U*. By contrast, for any particular *P*, *P* is *unrepeatable* in that there could not be such *x* and *y*.

The multiple location formulation (ML), sometimes called the 'Aristotelian' formulation, explains the repeatability of universals and the unrepeatability of particulars in terms of their capacity to occupy multiple locations. By contrast, the multiple instantiation formulation (MI) explains the repeatability of universals and the unrepeatability of particulars in terms of their capacity to have multiple instances.

The other popular conception of the particular-universal distinction is what I call the 'duplicability' conception, which can be traced back to Wisdom (1934, 208-209) and Williams (1986, 3). Ehring, a recent defender, explains its central idea as follows: '[the] potential for having a wholly distinct duplicate is what makes something a particular and the absence of that capacity makes something a universal' (2011, 32). We can implement it in the following way:

Duplicability (D).

For any particular *P*, *P* is *duplicable* in that there could be at least one distinct particular *P*★ such that *P* and *P*★ are perfect duplicates of each other. By contrast, for any universal *U*, *U* is *non-duplicable* in that there could not be any distinct universal *U*★ such that *U* and *U*★ are perfect duplicates of each other.

An equivalent way to formulate the duplicability conception is to define universals as those

entities which must conform to the principle of the *identity of indiscernibles* and particulars as those entities which may fail to conform to it, where the relevant version of the principle says that for any entities *x* and *y*, if they are exactly similar, then they are identical.

Both conceptions regard the particular-universal distinction as a fundamental distinction without restriction, applying to both objects and properties. For the sake of argument, however, I will confine my discussion to universal and particular *properties* only. Fortunately, this won't affect the generality of the conclusion. Given that the particular-universal distinction makes the categories of particular and universal jointly exhaustive, the distinction between particular properties (henceforth 'tropes') and universal properties (henceforth 'universals') also makes the two subcategories jointly exhaustive in the following derivative sense: every possibly existing property is either a trope or a universal. And if it could be shown that the trope-universal distinction is not jointly exhaustive in this derivative sense, it is implied that the more general particular-universal distinction cannot be jointly exhaustive either. Given this, we can write down three corresponding formulations of the trope-universal distinction:

Multiple Location for Properties (ML-P).

For any universal *U*, *U* is *repeatable* in that there could be distinct locations *l* and *l** such that (i) *U* is wholly present in *l* and (ii) *U* is wholly present in *l**. By contrast, for any trope *T*, *T* is *unrepeatable* in that there could not be such *l* and *l**.

Multiple Instantiation for Properties (MI-P).

For any universal *U*, *U* is *repeatable* in that there could be distinct entities *x* and *y* such that (i) *x* is an instance of *U* and (ii) *y* is an instance of *U*. By contrast, for any trope *T*, *T* is *unrepeatable* in that there could not be such *x* and *y*.

Duplicability for Properties (D-P).

For any trope T, T is *duplicable* in that there could be at least one distinct trope $T^{\star}$ such that T and $T^{\star}$ are perfect duplicates of each other. By contrast, for any universal U, U is *non-duplicable* in that there could not be any distinct universal $U^{\star}$ such that U and $U^{\star}$ are perfect duplicates of each other. Note that for any two properties to be perfect duplicates here is for them to 'confer perfect similarity in a respect' (Rodriguez-Pereyra 2017, 604) and whether these properties themselves share any higher-order properties is not directly relevant (Rodriguez-Pereyra 2017, 605).

1.1.3 The problem of amphibians

Behind each of the above two conceptions is something intuitive about what we think of as universals and tropes. The repeatability conception captures our belief that a universal, a 'one-over-many' as it is often put, is something capable of repeated occurrence—either in the sense of having multiple locations (ML-P) or in the sense of having multiple instances (MI-P). By contrast, a trope, being a particular, is either *particular* to the location which it occupies (ML-P) or *particular* to the object which possesses it (MI-P). In other words, they are unrepeatable. On the other hand, the duplicability conception captures our belief that a trope, being a particular 'instance' or 'instantiation' of an 'aspect' of reality, exists independently of other instances or instantiations of that aspect, if there are any. This means that it may have perfect duplicates. By contrast, a universal, being *the* aspect of which such perfect duplicate tropes are instances, cannot itself have perfect duplicates.

Ideally, our preferred conception would accommodate both of these intuitions about tropes and universals—or more precisely, intuitions about the *particularity* of tropes and the *universality* of universals. However, as I shall now demonstrate, the possibility of a special kind of entity shows that neither the repeatability conception nor the duplicability conception could do this.

First, note that since *being repeatable* and *being duplicable* do not seem to exclude one another in any apparent sense, there might be a sort of property that has both of these

capacities. If we interpret *being repeatable* as ML-P does, then such properties are those that could be wholly present in more than one place yet coexist with their perfect duplicates. And if we interpret *being repeatable* as MI-P does, then such properties are those that could be possessed by more than one object yet coexist with their perfect duplicates. Although being an unfamiliar sort of property, there seems to be no *prima facie* reason to rule out the possibility of such entities. David Lewis seems to be the first who explicitly considers such possibilities:

> A universal recurs; a trope has duplicates. We could also imagine an intermediate thing that sometimes recurs and sometimes has duplicates. (Lewis 1986b, 65)

In another place, he calls them 'amphibians' (Lewis 1986a, 39), as they function like typical universals in being repeatable and like typical tropes in being duplicable (1986a, 39-40). But despite the dismissive tone the term 'amphibian' might have suggested, they are not—so I claim—in any apparent sense less fundamental a kind of property than universals and tropes. Rodriguez-Pereyra (2017) provides a similar argument for the possibility of such properties and calls them 'indiscernible universals' instead. Since I do not take amphibians to be universals, I'll stick with the term 'amphibians'. (More on Lewis and Rodriguez-Pereyra's views below.)

In sum, there appears to be nothing objectionable about the notion of amphibians *per se*, that is, about a concept of properties that are both repeatable and duplicable. However, once we accept the possibility of amphibians, neither the repeatability conception nor the duplicability conception can account for both of the intuitions we wish to maintain. On the one hand, supporters of the repeatability conception, no matter whether they adopt ML-P or MI-P, are forced to regard amphibians as belonging to the category of universal since they are, by definition, repeatable. This implies that not only tropes but universals could also be duplicated, violating one of the above-explained intuitions. On the other hand, supporters of the duplicability conception are forced to regard amphibians as belonging to

the category of trope since they are, by definition, duplicable. But then not only universals but tropes are also repeatable, violating another of our intuitions.

This is what I call the 'problem of amphibians', which shows that both the repeatability conception and the duplicability conception are *biased* in the sense that neither is capable of accommodating the two requirements identified above at the same time. How should we respond to this difficulty? As indicated, my preferred view is to regard amphibians as, in a sense to be clarified, neither universals nor tropes. Before developing this account, however, it is worth considering whether other possible responses are viable. As we shall see, my proposal is the most promising.

1.1.4 Amphibians: indiscernible universals or scattered tropes?

The first possible reply is to bite the bullet and give up one of the intuitions to maintain either the repeatability conception or the duplicability conception. Rodriguez-Pereyra, for instance, adopts the repeatability conception and argues that nothing in the concept of universals as repeatable properties 'rules out the possibility of indiscernible universals' (2017, 606). Arguably, what he calls 'indiscernible universals' are just amphibians—properties that are repeatable yet duplicable.[7] However, such entities do not draw him away from the repeatability conception. On the contrary, he embraces it and objects to the duplicability conception (2017, 621-622).

To motivate a theory of amphibians, Rodriguez-Pereyra (2017, 607-616) argues that much philosophical work could be done if we posit such entities, which I take to be mostly successful and will not query here. Interestingly enough, the really serious and, according to him, the most common objection to his theory is that 'on it universals collapse into tropes' (2017, 620). To this, Rodriguez-Pereyra replies by resorting to the repeatability conception, claiming that universals can still be distinguished from tropes since only the former are

[7] Rodriguez-Pereyra (2017, 606) also mentions the connection to Lewis (1986a).

repeatable (2017, 620). I believe he is right in claiming this, but misses the real concern the objectors probably have in mind. Their worry is rather that classifying what he calls 'indiscernible universals' as a sort of universals contradicts our intuition that universals—being aspects of reality capable of having multiple instances—are not themselves duplicable like their instances. The objectors have presumably implicitly assumed something like the duplicability conception and thus cannot coherently imagine the possibility of duplicated universals, as they are ruled out *a priori* by such an account. According to them, amphibians, if genuinely possible, should be classified as a sort of tropes, and insisting that they are universals is thus collapsing universals into tropes. Now we seem to have reached a stalemate since supporters of both conceptions would insist on their own way of distinguishing universals from tropes, and the problem returns to whether we should adopt the repeatability conception or the duplicability conception in the first place. The moral of this, as I take it, is that although we should take seriously the possibility of amphibians, it is less clear that they should be regarded as universals. Therefore, without independent reasons, we'd better not reply to the problem of amphibians by biting the bullet.

A trope theorist might also reply by biting the bullet. Recall that Ehring (2011) adopts the duplicability conception according to which tropes are properties that can coexist with perfect duplicates. Nothing in this concept precludes the possibility of certain tropes—call them 'scattered tropes'—that could be multiply located.[8] Obviously, scattered tropes are nothing but a sort of amphibians. However, this does not draw him away from the

[8] The possibility of scattered tropes—or at least the possibility of such properties construed as *tropes*—is first introduced by Schaffer, where he calls them 'scattering individuals' instead (2001, 249). Schaffer takes such entities to be problematic and suggests we adopt what he calls the 'spatiotemporal individuation principle', according to which 'x and y are distinct tropes iff they are either not exactly resembling, or at distant locations (Distance(x,y)>0)' (2001, 249). This principle seems to have relied on something like ML-P, as the latter explains why tropes are thus individuated: it is because tropes cannot be multiply located that they are distinct when occupying different locations. This view leads us back to the repeatability conception considered above. That the duplicability conception doesn't rule out the possibility of scattered particulars is also pointed out by Giberman (2016).

duplicability conception. Instead, he embraces the trope's capacity for repetition (2011, 91).[9]

Ehring's view faces a similar difficulty to that of Rodriguez-Pereyra. For one might object that allowing tropes to have multiple locations is to confuse the notion of tropes with that of universals and thus collapsing tropes into universals (Allen 2016, 58). Of course, Ehring could reply by insisting that what distinguishes tropes from universals is their duplicability and not their repeatability. But then the debate will, again, end in a stalemate. The lesson is that although we should take seriously the possibility of amphibians, it is less clear that they should be seen as a sort of tropes.

A similar argument can be constructed if repeatability is instead understood as the capacity to be multiply instantiated. Assume, once again, that we adopt the duplicability conception and regard tropes as duplicable properties. Nothing in this rules out the possibility of some tropes being multiply instantiable as well. In a sense, such tropes are also 'scattered', as they are possessed by multiple objects. Given this, proponents of the repeatability conception would object that permitting tropes to be multiply instantiated in this way violates a crucial feature of tropes, namely that they are particular to the specific objects that possess them.[10] And proponents of the duplicability conception would presumably rejoin by insisting that what distinguishes tropes from universals is their duplicability, and the above-mentioned argumentative impasse resurfaces. Then we could draw the same conclusion as in the case of multiply-located tropes.[11]

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[9] If my interpretations of Rodriguez-Pereyra (2017) and Ehring (2011) are correct, then indiscernible universals and scattered tropes turn out to be the same thing, namely amphibians. This fact is itself interesting, showing that some contemporary theories of universals and tropes might not be that different in the end.

[10] Such a view becomes even more counterintuitive if tropes are taken to be *non-transferable*, that is, not capable of being possessed by objects other than those which, in fact, instantiate them (Heil 2003, 141-142).

[11] Here one might worry that this argument rests on the controversial assumption that tropes can be instantiated. According to certain metaphysicians, such as Lowe and Keinänen, instantiation is

To summarise, saving either the repeatability or duplicability conception by biting the bullet would be tendentious and would fail to fully account for the distinctive features associated with universals and particulars that we wish to maintain.

1.1.5 Radical approaches to the particular-universal distinction

A better response, then, would be to accommodate the intuitions behind both conceptions—that is, to take a universal to be both repeatable and non-duplicable, and a trope to be both duplicable and unrepeatable—and to adopt a conception of the particular-universal distinction that is compatible with these facts. One possible way of doing so is to adopt views that are, in certain respects, more radical than the reductionist conceptions considered so far. For instance, one might adopt *primitivism*, the view that the particularity of tropes and the universality of universals are primitive, basic, or fundamental. Defenders of this view *can* regard a universal as being repeatable and non-duplicable and a trope as being duplicable and unrepeatable at the same time, but nonetheless deny that these features account for what it is to be a universal or a trope. Instead, these features, according to them, are *derived from* the particularity of tropes and the universality of universals. Maurin (2002), for instance, adopts this view about tropes. When discussing why the duplicability conception fails, she says that the duplicability of a trope 'does not really tell us anything

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simply the wrong notion to characterise the relationship between tropes and objects (Lowe 2004, 2006; Keinänen 2011). In response, first note that there are certain concepts of tropes, such as what Garcia (2015b, 2015a, 2016) calls 'modifier tropes', that appear to be more suited to be instantiated by their objects. Second, a concept that takes a trope as its own (unique) instance does not seem to be a non-starter. In light of these cases, the argument has at least some limited force. Finally, even if tropes are not strictly instantiable according to some views, supporters of such views might still require some notions in the vicinity, such as *inherence* or *characterisation*, to capture the relationship between objects and tropes. Given this, an analogous case for the possibility of scattered tropes can still be made by using the term 'instantiation' in a more neutral sense: nothing in the concept of a trope as a duplicable property rules out the possibility that it may inhere in or characterise more than one object at the same time.

about the *particularity* of the trope' (2002, 17) but 'will follow *given* that the trope is not only qualitative (abstract) but also particular' (2002, 17). Similarly, she rejects the repeatability conception because 'even if it is true that one and the same trope cannot exist but in one unique region in space and time, we may still ask *why* … [it] cannot exist but at one place at one time' (2002, 20). And the answer, according to her, is that it is true '*because* tropes are *particulars*' (2002, 20). I do not know any universalist that explicitly adopts primitivism, but it seems to be a coherent position as well.

I take primitivism to be a viable option, but only as our last resort. The reason is that particularity and universality under such a view seem to be mysterious and redundant. Explaining particularity and universality in terms of simple facts about the capacities of properties to repeat or duplicate might be unsatisfactory, but refusing to answer what they are doesn't seem to make the situation better—it only makes them mysterious. More importantly, primitive particularity and universality seem to be redundant since the account that I defend can reduce particularity and universality while preserving all the alleged advantages of primitivism.

Another radical view is *scepticism*, which denies that there is a genuine distinction between particulars and universals.[12] Indeed, why insist that there is a particular-universal distinction in the first place, when the dominant approaches fail to adequately explain what it is to be a trope or a universal? Note that proponents of scepticism can agree that a property for a theory of universals is both repeatable and non-duplicable, and that a property for a theory of tropes is both duplicable and unrepeatable, in the ways explained above. It is just that they reject the need to postulate a genuine distinction.

My main reason for rejecting scepticism, again, is that I believe there is a way to characterise the particular-universal distinction in an unbiased manner. Moreover, it seems

[12] See Ramsey (1925) and MacBride (2005) for arguments in favour of scepticism. Again, given the objective of this chapter, I will focus on whether admitting the possibility of amphibians leads one toward scepticism.

that, if possible, accepting the existence of a genuine particular-universal distinction is a preferable stance to denying that there is any such distinction. This is because the distinction is so central to contemporary metaphysics that abandoning it would, as indicated, imply that a wide range of theories built upon it have no intellectual substance—a consequence we would do well to avoid.

Still, I believe that the viability of primitivism and the appeal of scepticism reveal the same underlying issue with dominant reductionist conceptions. Traditionally, the particular-universal distinction is often assumed to have cut across reality in such a way that every possibly existing entity either belongs to the category of particular or universal, but not both. Given what has been argued so far, however, it might seem that this requirement 'impose too high a threshold' (MacBride 2005, 609), as it makes it impossible to accept both intuitions behind the repeatability conception and the duplicability conception while admitting the possibility of amphibians. In light of this, those who find the view unsatisfactory but still wish to uphold a genuine particular-universal distinction might question this constraint and adopt a more flexible conception according to which particulars and universals fail to be mutually exclusive or jointly exhaustive or both (MacBride 2005, 609). The view that I prefer rejects precisely this assumption and attempts to combine these two conceptions in a more satisfying manner.

1.1.6 A novel account of property categorisation

To achieve the new account, we must adopt a new methodology. Traditional reductionist approaches have typically assumed that the particular-universal distinction can be formulated as a distinction between the *F*s and the non-*F*s, where *F* is some capacity that particulars and universals might have or lack. Thus we have the distinction between the repeatables and the unrepeatables, or the distinction between the duplicables and the non-duplicables. Such a view, however, might lead one into thinking that we must focus on one particular capacity *F* and identify universals with the *F*s and tropes with the non-*F*s or *vice versa*. However, as

I have demonstrated, no one feature alone genuinely respects all our intuitions on the matter. To unbiasedly account for the distinction, at least both the repeatability and the duplicability must be considered.

My suggestion, then, is to reverse this tradition, that is, to start with our preferred concepts of properties and derive from them the corresponding conception of the particular-universal distinction. The distinction will not, in principle, be restricted to a distinction between the *F*s and the non-*F*s, but will be a distinction between two fundamental categories, each of which has a distinctive metaphysical role determined by a series of capacities played exclusively by its members. More specifically, focusing on the two capacities discussed, we can draw the following table representing a more fine-grained theory of different concepts of properties:

Table 1. 1 Categories of properties

Property	Repeatable	Unrepeatable
Non-Duplicable	1. Strong Universals	3. Unicums[13]
Duplicable	2. Amphibians	4. Strong Tropes

Table 1. 1 gives us four *sui generis* sorts of property, according to which amphibians (Box-2

[13] As can be seen, what I am calling 'unicums' are properties that are both unrepeatable and non-duplicable. On the face of it, proponents of unicums might have difficulty accounting for attribute agreement. On the one hand, since they are non-duplicable, there is at most one unicum that could confer the property *F*. On the other hand, since they are unrepeatable, a unicum could be possessed by at most one object. But then it is hard to explain how there could be more than one object that has *F*.

One possible response available to proponents of unicums is to reject attribute agreement in a strict sense and to identify the entire world with an 'enormously structured' distributional property (Builes 2021). Such an overarching property can be taken to be a unicum, since it is unrepeatable (in no world are there two worlds possessing such a property) and non-duplicable (in no world are there two such overarching properties). Candidates for unicums might also include *individual essences* (MacBride 1998b, 217) and *qualitative haecceities* (Adams 1979, 9-13).

properties) constitute a category of property distinct from what I call 'strong universals' (Box-1 properties) and 'strong tropes' (Box-4 properties). I regard amphibians as constituting a category of property as fundamental as that of strong universals and strong tropes. The reason is that repeatability and unrepeatability are in a sense on a par: having one of them is to be attributed the same kind of ontological status as having the other. And likewise for duplicability and non-duplicability. In other words, insofar as these categories are defined solely in terms of repeatability/unrepeatability and duplicability/non-duplicability, they are equally fundamental.

With such an account at hand, we can derive a novel reductionist conception of the trope-universal distinction:

Trope-Universal Distinction.

For any property *F*, *F* is a trope iff *F* is both duplicable and unrepeatable, and *F* is a universal iff *F* is both repeatable and non-duplicable.

Generalizing to include both objects and properties, we get:

Particular-Universal Distinction.

For any entity *x*, *x* is a particular iff *x* is both duplicable and unrepeatable, and *x* is a universal iff *x* is both repeatable and non-duplicable.

This novel conception appears to be the most promising account. On the one hand, it respects the intuitions behind both the repeatability conception and the duplicability conception by taking a universal to be repeatable and non-duplicable, and a trope to be duplicable and unrepeatable, while also accommodating the possibility of amphibians. It therefore provides a better response to the problem of amphibians than simply biting the bullet.

On the other hand, the view offers a middle ground between primitivism and scepticism, avoiding the unwanted elements of both. First, it avoids mysterious primitive particularity and universality by reducing them to combinations of two more familiar capacities of properties: universals are *universal* in virtue of being *repeatable* and *non-duplicable*, whereas tropes are *particular* in virtue of being *duplicable* and *unrepeatable*. Second, unlike scepticism, it accepts a genuine particular-universal distinction, thereby ensuring that theories assuming this distinction have sufficient resources to adequately explain their views.[14]

1.1.7 Objections and replies

1.1.7.1 Exhaustiveness

Let us now turn to possible objections directed at my new account. An implication of this account, as adumbrated, is that particulars and universals are not jointly exhaustive. Here one might worry that this makes the account unmotivated, given that exhaustiveness is a longstanding and widely accepted feature associated with the particular-universal distinction.

In reply, I agree that the proposed novel conception is, to some extent, revisionary. But it is not revisionary in any way that distorts the notion of the particular-universal distinction. Instead, as I've argued, it fully respects what many take to be distinctive features of particulars and universals—in an unbiased way that even the dominant conceptions, such as the repeatability conception and the duplicability conception, cannot. And it is precisely due to the abandonment of exhaustiveness that the novel account has such merits. Therefore, the novel account is not unmotivated.

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[14] The possibility of unicums constitutes a parallel reason for accepting the novel conception of the particular-universal distinction: since nothing precludes a property from being unrepeatable and non-duplicable at the same time, unicums are *prima facie* possible. And for similar reasons as in the case of amphibians, we should treat them as belonging to a *sui generis* sort of property distinct from strong universals and strong tropes.

But then one might wonder why the exhaustiveness requirement is so deeply ingrained. The reason, I believe, is that traditional conceptions are mainly proposed to accommodate paradigm cases of universals and particulars. Such cases are perfectly distinguished in the way we want by traditional conceptions—which typically reduce the particular-universal distinction to the distinction between the *F*s and the non-*F*s. And since this view conforms naturally with the exhaustiveness requirement, the latter is rendered unproblematic. However, as argued above, focusing on one feature of properties, such as their repeatability or duplicability, is problematic when we take more seriously the possibility of amphibians. Therefore, even though we are used to taking for granted the exhaustiveness requirement, some modification might be required.

1.1.7.2 Arbitrariness

The second objection is that, given the novel account of property categorisation, it seems arbitrary that I define universals exclusively as Box-1 properties and tropes exclusively as Box-4 properties. Indeed, why not define them differently and thus derive other conceptions of the particular-universal distinction?

In a sense, I can agree that the labelling provided is not especially important. So long as it is acknowledged that what I am calling 'amphibians' renders the repeatability conception and duplicability conception to be biased—at least for those who accept the relevant intuitions concerning universals and tropes—and thus it is acknowledged that the notion of a property that is both repeatable and duplicable is to be distinguished from that of a property that is both repeatable and non-duplicable and that of a property that is both unrepeatable and duplicable, I have no queries about using different labels than 'amphibians', 'strong universals', and 'strong tropes' for such entities.

That being said, I believe that strong universals and strong tropes are better candidates for 'universals' and 'tropes' than their rivals. To see this, consider what I call the 'weak' concepts of universals and tropes: a *weak universal* is a property that is repeatable, regardless

of whether it is duplicable, whereas a *weak trope* is a property that is duplicable, regardless of whether it is repeatable. In other words, both Box-1 and Box-2 properties count as weak universals and both Box-4 and Box-2 properties count as weak tropes. Strong universals and tropes seem to fit better with the universalist and tropist picture concerning attribute agreement. Take, for instance, two objects, *a* and *b*, that both have some property *F*. The universalists' typical explanation is that it is in virtue of *a* and *b*'s possessing the same universal *U* that they both have *F*. But a weak concept of universals does not guarantee this. For all it guarantees is that *U* is repeatable. It is compatible with this, as pointed out by Rodriguez-Pereyra (2017), that *a* and *b* both have *F* because they possess distinct, indiscernible (weak) universals. To guarantee that *a* and *b* possess numerically the same universal *U*, it must be further agreed that *U* is the only *F*-conferring property, that is, it is not duplicable. And the most straightforward way is to adopt the strong concept which says that to be a universal just is to be a property that is both repeatable and non-duplicable. Similarly, the tropists' typical explanation is that it is in virtue *a* and *b*'s possessing their respective *F*-conferring tropes, say *T* and $T^{\star}$, that they both have *F*. However, a weak concept of tropes does not guarantee this. For all it guarantees is that a trope is duplicable. Nothing in this precludes the possibility that *a* and *b* both have *F* because they possess the same scattered (weak) trope. To guarantee that *a* and *b* possess distinct tropes, it must be conceded further that every trope can only be had once, that is, it is unrepeatable. But then we are turning to the strong concept. Therefore, I take strong universals and tropes to be better candidates for 'universals' and 'tropes'.[15]

[15] In Ou (2024, 289), I offered another reason to prefer strong universals/tropes over weak universals/tropes, which turns on the internal unification of properties. The idea is that, whereas strong universals are both repeatable and non-duplicable, thus having a higher degree of similarity, weak universals are those that resemble each other in being repeatable only, thus having a lower degree of similarity. This seems to constitute a reason to believe that strong universals are better candidates for what Lewis (1983) calls 'natural properties' which carve nature at its joints. And similarly for strong and weak tropes.

However, as pointed out to me by Rodriguez-Pereyra, the properties that are natural in Lewis's

1.1.7.3 Putative counterexamples

I anticipate that the most common objection to my novel account is that it incorrectly classifies entities in one category as entities in another. Indeed, given that it combines the dominant features of both the repeatability conception and the duplicability conception, it might be objected that some putative counterexamples to these accounts are also counterexamples to my new account.

The first sort of counterexamples is *repeatable particulars* such as *spatially extended simple particulars* (Ehring 2011, 25-27) and *enduring time-travelling particulars* (MacBride 1998b, 222-223; Ehring 2011, 27-28). It is argued that such entities, if genuinely possible, constitute counterexamples to the repeatability conception since they are incorrectly classified as universals. Similarly, it might be objected that such entities constitute counterexamples to my account since they are incorrectly classified as amphibians.

I've always been perplexed by this argument based upon the alleged possibility of repeatable particulars, not because I find their possible existence to be dubious, but because regarding such entities as what they are said to be according to the objectors seems to me to be begging the question. Let me ask: on what ground are they appropriately called 'particulars' in the first place? It is no good to say that they are particulars because they are duplicable, for that seems to have implicitly assumed something like the duplicability conception. But then why say that they are particulars? It is not as if when one calls them 'particulars' they immediately count as a genuine sort of particulars. The objectors owe us a reason for seeing such entities as particulars. (Note that this does not mean that such entities constitute no difficulty for the repeatability conception. As explained, given that there could be repeatable yet duplicable entities, the repeatability conception is biased in that it cannot

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sense account for resemblances between objects having those properties, not for resemblances between those properties themselves. So, it is not clear that a strong universal/trope is more natural than the corresponding weak universal/trope in Lewis's sense.

account for the intuition that universals are non-duplicable. But that argument does not rely on the assumption that such entities are regarded as amphibians in the first place.)[16]

The case can be made even more vivid if we consider another putative sort of counterexamples, namely properties such as *being the funniest man* or *being the highest charged point particle in the universe*. Suppose, for the sake of argument, that such properties are genuinely possible. It is striking to see that such properties can be regarded as counterexamples to the repeatability conception and the duplicability conception at the same time just by changing titles. On the one hand, they are regarded as possible candidates of necessarily singly located *universals* and thus constitute potential counterexamples to the repeatability conception (MacBride 1998b, 218; Ehring 2011, 42). On the other hand, they are regarded as possible candidates of necessarily non-duplicable *tropes* and thus constitute potential counterexamples to the duplicability conception (Ehring 2011, 42-43). But why should we interpret them as instances of universals or as instances of tropes in the first place? It is no good to say that they are universals rather than tropes because they are non-duplicable, for that seems to have implicitly assumed something like the duplicability conception. Similarly, one should not regard them as tropes simply because they are unrepeatable. Are there other reasons to regard them as universals or tropes? It is hard to see. Indeed, reflecting on the fact that they are both non-duplicable and unrepeatable, and thus have and lack some typical capacities associated with both universals and particulars, one might have reasons to regard them as neither universals nor tropes. And that is what is to be expected according to my account: they are unicums.[17]

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[16] Giberman (2022) recently argues that cases like spatially extended simple particulars and enduring time-travelling particulars do not constitute genuine counterexamples to the repeatability conception because they are based on uncompelling principles. If his arguments were successful, then these cases do not constitute genuine counterexamples to my account as well.

[17] Similar arguments apply to entity haecceities and individual essences. Assume they are candidates for necessarily singly located universals, and hence potential counterexamples to the repeatability conception. MacBride asks: 'why should we grant that haecceities and individual essences are universals in the first place? Surely we lack reliable pre-theoretical intuitions concerning such

In sum, the alleged counterexamples to my account do not work since they are problematic only if one adopts other conceptions of the particular-universal distinction in the first place. The lesson to be learnt here seems to be that we have no conception-free intuition about which property belongs to which category. A property can plausibly be regarded as belonging to a category only when it has certain capacities typically associated with that category.

1.2 An Amphibianist Account of Attribute Agreement

That concludes my defence of a conception of the particular-universal distinction which is compatible with the possibility of amphibians. It should now be clear as well what I mean by claiming that amphibians constitute an ontological category distinct from universals and tropes, despite all three being properties: amphibians are repeatable and duplicable properties; universals are repeatable and non-duplicable properties; and tropes are unrepeatable and duplicable properties.

The next step towards an amphibian-based account of properties is to clarify their relationship to the objects that possess them. Following Campbell (1990, 29), I shall distinguish between two related questions: (i) in virtue of what does an object *a* have a property *F*? and (ii) in virtue of what do two distinct objects, *a* and *b*, have the same property *F*? Let us follow Campbell in referring to these as the 'A question' and the 'B question', respectively (1990, 29).

The answers typically given to the A question are similar according to proponents of all three concepts of properties: it is in virtue of *a*'s possessing an *F*-conferring

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outlandish entities?' (1998b: 217). I'd add that if the reason for regarding such entities as universals is that they are non-duplicable, one is likely assuming something like the duplicability conception, which begs the question against the repeatability conception. For parallel reasons, we should not treat them as particulars just because they are unrepeatable. In fact, seeing that they are both non-duplicable and unrepeatable, we have reason to regard them as neither universals nor tropes.

universal/trope/amphibian that *a* has *F*. This fact—that *a* possesses an *F*-property—can be further cashed out in different ways, depending on which ontological account of objects is adopted. In the next chapter, I shall defend a version of the bundle theory according to which the fact that *a* possesses an *F*-conferring amphibian is grounded in the fact that the relevant amphibian-bundle is constituted by the relevant *F*-conferring amphibian. For now, allow me to assume that *some* amphibian-based answer to the A question is viable.

Consider, then, the B question, which calls for an adequate explanation of how distinct objects, *a* and *b*, can plausibly be said to have the same property *F*. Here the three theories of properties offer different answers, two of which we have already encountered in Section 1.1.7.2: according to universal theorists, the fact that *a* and *b* both have *F* is grounded in the fact that *a* and *b* possess numerically the same *F*-conferring universal, say *U*. By contrast, trope theorists hold that *a* and *b* are both *F* in virtue of each possessing a distinct *F*-conferring trope, say *T* and *T**, respectively.

Proponents of amphibians can adopt either strategy. Since amphibians have both the capacity to repeat and to duplicate, the fact that *a* and *b* are both *F* can be explained either by saying that *a* and *b* possess the same *F*-conferring amphibian, say *A*, or by saying that *a* and *b* each possesses a distinct *F*-conferring amphibian, say *A* and *A**, respectively.

1.2.1 The cookie-cutter case

An immediate worry about this amphibian-based theory of attribute agreement might be that the view seems unnecessarily complex or undesirably disunified. Indeed, why accept two explanatory strategies when one can be applied in all cases?

The reason is that there are cases that seem to require both strategies. Consider two cookie cutters that both produce heart-shaped cookies. Suppose each is used to make ten cookies: c_1, c_2, c_3, …, c_{10} from the first cutter, and c_1^*, c_2^*, c_3^*, …, c_{10}^* from the second cutter. Suppose further that the cutters are located far enough apart so that we can

safely assume the cookie-making processes are causally isolated. How would proponents of different property-based accounts explain sameness in shape in such a case?

According to universal theorists, such a case involves nothing but twenty objects sharing the same heart-shapedness universal. Trope theorists, by contrast, hold that what we have here are instead twenty objects, each of which possesses a distinct heart-shapedness trope.

Both explanations, however, seem to overlook something important in the cookie-cutter case. On the one hand, the universal-based account fails to show that the cookies derive their shape from two, rather than one, cutter. It forces its proponents to regard the two causally isolated clusters of cookies as being ontologically connected in a way they should not be. On the other hand, the trope-based account fails to show that some cookies derive their shape from the same cutter. It forces its proponents to regard cookies produced by the same cutter as wholly distinct entities. Therefore, even if both the universal-based and trope-based theories can offer some explanation of the cookie-cutter case, neither seems to be entirely satisfactory, as they both fail to account for the intuitive 'two-tier' resemblance structure in such a case.

Proponents of amphibians can tell a more plausible story. First, it respects the fact that some cookies inherit their shape from the same cutter: c_1, c_2, c_3, …, c_{10} have the same shape since these objects possess the same heart-shapedness amphibian *A*. Similarly, c_1^*, c_2^*, c_3^*, …, c_{10}^* possess the same heart-shapedness amphibian $A^\star$. Second, it captures the fact that there are two different cutters from which the cookies derive their shape: *A* and $A^\star$ are numerically different yet exactly resembling heart-shapedness amphibians. Combining these aspects, amphibian theorists can offer an account that conforms with the subtle resemblance structure in the current case: the fact that the twenty cookies have the same shape is grounded in the fact that there are two exactly resembling amphibians, *A* and $A^\star$, each of which is possessed by ten cookies, namely c_1, c_2, c_3, …, c_{10} and c_1^*, c_2^*, c_3^*, …, c_{10}^*, respectively.

Therefore, the cookie cutter case—and, more generally, cases involving a similar two-tier structure of resemblance—provides an initial motivation for the amphibian-based account of attribute agreement. What might initially appear as problematic complexity or disunity may instead prove to be an indispensable form of flexibility. Note that I do not take the cookie-cutter case to constitute anything like a knock-down argument against rival views, as several of its assumptions are open to dispute. For instance, one might question whether the causal isolation of the two clusters of cookies genuinely supports the ontological claim that there are numerically distinct shape properties in such a case. Likewise, it is contestable whether cookies produced by the same cutter should be taken to involve numerically the same shape property. For now, I am content with the conditional claim that if such assumptions are plausible, proponents of amphibians can offer a more satisfactory explanation of attribute agreement than proponents of universals or tropes. In any case, the amphibian-based account of attribute agreement should not be dismissed out of hand.

1.2.2 Structural properties

Another place where amphibians may prove to be useful is that they can support an account of structural properties (Lewis 1986a, 39-40). For various reasons, metaphysicians may be drawn to the idea of accepting some structural properties—complex properties that have other simpler properties as constituents. Consider, for instance, a methane molecule, which consists of one carbon atom and four hydrogen atoms, where the carbon atom is bonded to each of the four hydrogen atoms. To account for certain facts concerning the methane molecule, such as the fact that it resembles other methane molecules, metaphysicians may see the need to postulate a corresponding structural property *methane* which is isomorphic to the methane molecule, constituted by a property of *carbon*, four properties of *hydrogen*, and four relations of *bonded*. The idea is that, when the whole of the molecule instantiates the whole of the property, the parts of the molecule also instantiate the corresponding parts of the property (Lewis 1986a, 33).

This view, however, seems to generate a serious problem for the traditional universal-based account according to which the structural property, as well as its constituent properties, are all universals. Lewis summarises the problem as follows:[18]

> Each methane molecule has not one hydrogen atom but four. So if the structural universal *methane* is to be an isomorph of the molecules that are its instances, it must have the universal *hydrogen* as a part not just once, but four times over. Likewise for *bonded*, since each molecule has four bonded pairs of atoms. But what can it mean for something to have a part four times over? What are there four of? There are not four of the universal *hydrogen*, or of the universal *bonded*; there is only one. (Lewis 1986a, 34)

As explained, universals are non-duplicable, and so there cannot be more than one exactly resembling universal for any property. Yet here we seem to witness a case where we want to accept within a repeated qualitative whole more than one duplicated qualitative part. This is where postulating amphibians may be useful. The idea, to wit, is to replace non-duplicable universals, such as *carbon* and *hydrogen*, with duplicable amphibians.

There is more than one way that this solution can be realised. The version that Lewis favours—though ultimately rejects—is one that retains a broadly universalist outfit while incorporating some amphibians to deal with duplicable constituents. The methane molecule, according to this view, instantiates a methane universal which is constituted by a carbon amphibian, four hydrogen amphibians, and a dyadic universal of bonding standing between the carbon amphibian and each of the four hydrogen amphibians (Lewis 1986a, 39-40). The account that I prefer is the amphibian-only view according to which the methane molecule instantiates a methane amphibian which is constituted by a carbon amphibian, four hydrogen amphibians, and four dyadic amphibians of bonding, each

[18] See also Armstrong (1978a, 69-70; 1986; 1997, 34-37).

standing between a carbon-hydrogen pair.

The universal-plus-amphibian account, I claim, has less to recommend it. For one thing, it seems better that we treat all constituents of a structural property in the same way. Indeed, why regard the case of hydrogen as involving four amphibians, each of which being instantiated once, while the case of bonding as involving one universal being instantiated four times? It seems better that we postulate four bonding amphibians. But if not only the carbon and the hydrogen, but also the bonding, are amphibians, what reason remains not to take the whole structural property itself to be an amphibian as well? Moreover, the universal-plus-amphibian view is clearly less parsimonious than the amphibian-only view, since it posits a two-category ontology of properties. It is doubtful whether the case of structural properties alone provides sufficient reason for such a substantial ontological commitment.

Lewis's own motivation for preferring the universal-plus-amphibian view is somewhat puzzling. According to Lewis, we need the universal of bonding to relate amphibians, 'else we're still in trouble over the universals *butane* and *isobutane*' (1986a, 40). Since the amphibian-only view takes both butane and isobutane to be constituted by four carbon amphibians, ten hydrogen amphibians, and thirteen dyadic amphibians of bonding, 'it leaves us with a mystery about why one [property] is instantiated by the straight-chain butane molecules and the other by branched-chain isobutane molecules' (1986a, 40). In light of this, to distinguish the straight-chain of amphibians from the branched-chain of amphibians, Lewis concludes that 'we need bonded amphibians, and if we have bonded amphibians we don't also need amphibians of bonding' (1986a, 40).

It is true that we need more than a list of what constituent properties there are to distinguish the property *butane* from the property *isobutane.* It is also true that with the help of bonded amphibians, taken as involving the universal of bonding, we can achieve this goal. However, it is not clear at all that the thirteen amphibians of bonding cannot do the same trick: just as the universal of bonding enables four carbon amphibians and ten

hydrogen amphibians to be combined in two ways with its thirteen instantiations, the thirteen amphibians of bonding can also allow them to be combined in two corresponding ways.[19] Therefore, I take the amphibian-only account to be not only viable but also preferable to the universal-plus-amphibian account.[20]

In any case, the case of structural properties seems to constitute a motivation for accepting amphibians as opposed to a universal-based view. Does it also constitute a parallel reason for preferring to take properties to be amphibians rather than tropes? Not obviously so. Given that tropes are duplicable, proponents of the trope theory can adopt a similar strategy here and account for the case of methane as involving a methane trope constituted by a carbon trope, four hydrogen tropes, and four dyadic tropes of bonding. And likewise for butane and isobutane. So, it might seem that the trope theory is doing just as well as the amphibian theory in this respect.

Note, however, that the trope view does force its supporters to take the structural property itself to be an unrepeatable property, whereas amphibianism *can* treat it as a repeatable property possessed by different objects. Perhaps trope theorists are willing to accept this result, since they already take each simpler property to be incapable of being possessed by more than one object. But amphibianists have at least the merit of retaining the flexibility to account for the phenomenon in both ways, which may count as a provisional advantage, given that it has not yet been settled which account is ultimately preferable.

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[19] Roughly, in the case of *butane*, two carbon amphibians are bonded to one carbon amphibian, and two carbon amphibians are bonded to two carbon amphibians; in the case of *isobutane*, three carbon amphibians are bonded to one carbon amphibian, and one carbon amphibian is bonded to three carbon amphibians.

[20] Adopting the universal-plus-amphibian account seems to be part of the reason why Lewis thinks that amphibians would incur 'fascinating questions' that are 'too bizarre to take seriously' (1986a, 40). By contrast, adopting the amphibian-only account would at least mitigate the alleged bizarreness—if there is any at all.

1.3 Conclusions

I have explained in what sense amphibians constitute a fundamental category distinct from universals and particulars and how this view can be supported by a plausible conception of the particular-universal distinction. I have also proposed a novel account of attribute agreement based on amphibians and provided some initial cases for it. I hope this much would convince the reader that a theory of amphibians should be taken as a serious contender in the modern debate between different theories of properties—at least, the view should not be taken as a non-starter. A more comprehensive defence of the view, of course, has to wait until I explain how it can be put to much philosophical work. It is to one of these aspects, namely, to build an amphibian-based account of objects, that I now turn.

2

Objects

2.1 Bundle Theory

In this chapter I shall develop the other aspect of the core theory, namely, an amphibian-based account of objects. In particular, I shall defend a version of the bundle theory according to which an object is identical to a bundle of amphibians.

The bundle theory is often characterised as the view that objects, like tables and chairs, are *nothing more than* bundles of properties. This somewhat imprecise characterisation is good in two aspects. First, it underlies the main motivation for the view, namely, to exclude ontologically superfluous or empirically dubious entities accepted by rival theories, such as substrata within the substratum theory, from being literal constituents of objects. Second, it is flexible enough to include interesting accounts in the vicinity to be seen as different versions of the bundle theory. For instance, by remaining neutral about what is meant by 'nothing more than', both the stronger view which takes an object to be *identical to* a bundle of properties, and the weaker view which takes an object to be *exhaustively constituted by* such properties,[21] count as *bona fide* bundle theories. Likewise, the characterisation allows bundle theorists to interpret, within a reasonable range, what the 'bundling' relation amounts to, allowing, for instance, both spatiotemporal co-location and primitive compresence relation to be legitimate candidates. Let us adopt this characterisation as our starting point.

Despite its apparent merits, the bundle theory faces a series of difficulties. As it turns out, whether a version of the bundle theory can be rendered successful depends upon its capability to deal with such objections. The bulk of this chapter is thus devoted to an

[21] Rodriguez-Pereyra (2004) and Demirli (2010), for instance, adopt this characterisation.

examination of what I take to be the most important objection to the bundle theory, which challenges its ability to account for 'symmetrical universes'—scenarios involving duplicate objects such as the famous 'two-sphere' world consisting of two indiscernible spheres being at a distance from each other (Black 1952). It has been argued that such scenarios underpin a devastating objection to the traditional universal-based bundle theory. In response, bundle theorists have either developed more sophisticated versions of the universal-based account or have simply converted to the trope-based bundle theory to accommodate cases like the two-sphere world. There seems to be a consensus among metaphysicians, then, that with such modifications, bundle theorists can in principle respond to the objection.

However, as I will argue, the challenge posed by symmetrical universes is far more problematic than previously recognised, as fully addressing it requires accommodating two different kinds of symmetrical universes, or two different interpretations of such universes. Since both kinds are arguably equally plausible, a theory of objects is at best incomplete if it can only account for one of them. As I will demonstrate, most versions of the bundle theory, including *naïve* bundle theories which accept nothing but universals or tropes at the fundamental level of being as well as *sophisticated* accounts positing entities in addition to universals and tropes, are subject to just this problem. Other modified versions of sophisticated accounts, though endowed with ontological resources in principle capable of accommodating both kinds of symmetrical universe, do so only at the cost of violating the main motivation for the bundle theory. Therefore, such views fail to provide satisfactory accounts of symmetrical universes as well.

In light of this, I propose a novel version of the bundle theory that is conservative in its ontological commitment yet is able to accommodate both kinds of symmetrical universe in a simple and straightforward manner. The idea, as adumbrated, is to regard the bundled properties as amphibians. If successful, then this would suggest that bundle theorists have strong reasons to prefer this novel account. In defending its superiority, I will also address two objections: first, that the two kinds of symmetrical universe are not equally plausible;

and second, that they must ultimately collapse into a single kind of universe.

2.2 Symmetrical Universes and Naïve Bundle Theories

The main theoretical role the all-important bundling relation plays within the bundle theory is to serve as a *bundler*, namely that which combines in some manner certain properties, such as universals and tropes, to form bundles. A bundle in this sense is to be contrasted with a mere *collection* of properties: the former denotes a unified entity while the latter some disunified things. A distinct yet also important question is whether the bundling relation is also serving as a *category-transformer*—something that enables a bundle to fall under a different ontological category than the bundled properties. Let us call a bundle theory 'lightweight' if the bundling relation plays no more than the role of a bundler. An implication of the lightweight view is that it is category-preserving: a universal-bundle, like its constituent universals, is a universal, while a trope-bundle, like its constituent tropes, is a particular.[22] A 'heavyweight' bundle theory, by contrast, holds that the bundling relation functions more than a mere bundler: it may also function as a category-transformer. For instance, a heavyweight universal-based bundle theory might hold that a collection of universals becomes a particular when they are bundled together. A less familiar, but nevertheless coherent, heavyweight account would be a trope-based view which takes trope-bundles to be universals in virtue of the tropes being bundled.

In what follows, I will mainly be concerned with lightweight bundle theories for two reasons. First, most representative bundle theories in the extant literature fall into this category. Second, it seems to me that a conception of the bundling relation as both a bundler and a category-transformer would make the relevant accounts look too close to

[22] O'Leary-Hawthorne (1995), for instance, adopts this view about universal-bundles. Extant versions of the trope-based bundle theory—as far as I can tell—all adopt this view about trope-bundles.

views that might more aptly be classified as rival theories. For instance, it has been argued—plausibly I think—that the bundling relation within some heavyweight universal-based bundle theories plays essentially the same role as that of substrata, thereby collapsing the distinction between the bundle theory and the substratum theory (Benovsky 2008). At any rate, it seems that proponents of heavyweight bundle theories have not said enough about the exact mechanism of their bundling relations. In light of these, I will only offer a brief discussion of heavyweight accounts. In any case, since invoking heavyweight accounts does not help bundle theorists to accommodate symmetrical universes, even if one finds those accounts more appealing, my conclusions will remain unchanged.

2.2.1 The duplication objection

Let us, then, consider first lightweight bundle theories. The paradigmatic view, which will also be the starting point of our discussion, is the naïve universal-based bundle theory—hereafter 'naïve UBT'—which holds that an object is identical to a bundle of universals (O'Leary-Hawthorne 1995; O'Leary-Hawthorne and Cover 1998; Curtis 2014). An electron, for instance, is identical to the bundle constituted by a charge-universal, a mass-universal, a spin-universal, and so forth. Numerically distinct electrons have the same property—say, charge—by virtue of the corresponding universal-bundles having a numerically identical property, the charge-universal, as a common constituent.

Naïve UBT, though simple and elegant, is notoriously hard to defend. For it faces a devastating objection—the 'duplication' objection—which runs as follows.[23] According to naïve UBT, any two objects must possess the same property *F* by virtue of having the same universal *U* as a constituent. Given this, any two indiscernible objects—that is, objects that

[23] See Armstrong (1978b, 91) and Loux (1998, 107) for classic statements of this objection, and Rodriguez-Pereyra (2004) and Benocci (2018) for discussions of what metaphysical principles are underlying it.

share all the same properties—must be constituted by the same collection of universals. Now, a seemingly plausible metaphysical principle holds that any two objects sharing the same constituents must be numerically identical.[24] From this, naïve UBT is committed to the following version of the principle of the *identity of indiscernibles* (PII): any two indiscernible objects must be numerically identical. There is, however, a famous counterexample to PII, put forward by Black (1952, 156), which consists of a world where there is nothing but two indiscernible iron spheres being at some distance from each other. Given the possibility of the two-sphere world, PII is false. And since naïve UBT is committed to PII, the two-sphere world also refutes naïve UBT.

Worlds like the two-sphere world constitute what I take to be the first kind of symmetrical universe that plague bundle theorists. As we can see, the crucial feature that makes naïve UBT impoverished in accounting for such a world is that universals are by their very nature *non-duplicable*—there cannot be numerically distinct universals conferring the same property to the objects that possess them. As Armstrong puts it, 'different universals cannot resemble exactly, because if they did, then they would be the same universal' (1997, 50). If a universal cannot have duplicates, then a bundle of universals cannot have duplicates either, making it impossible for there to be distinct objects sharing the same properties from naïve UBT's perspective.

An intuitive yet unsuccessful attempt to solve to the duplication objection is to claim that, while universal-bundles are non-duplicable, the bundles corresponding to the two spheres in Black's thought experiment are nonetheless distinct since they occupy different

[24] Compare this principle with the stronger principle according to which any two *complex entities* having the same constituents must be numerically identical (Loux 1998, 107). Rodriguez-Pereyra (2004, 76-7) has plausibly argued that this latter principle is at best controversial since some kinds of complex entity, such as Armstrongian states of affairs, presumably violate it. By contrast, the weaker principle stated above seems to be less problematic as it only concerns a subcategory of complex entities, namely ordinary objects. (Rodriguez-Pereyra (2004, 77-80) ultimately rejects this principle by proposing a sophisticated bundle-theoretic account. More on his view below.)

locations. The idea here is to take objects as having not only *qualitative* but also *locative* universals as constituents.[25] According to this view, since the two spheres in Black's world occupy different locations, the bundles identified with them are constituted by different locative universals. Given this, since each sphere-bundle includes a constituent that the other lacks, the two spheres can be distinguished.

The problem, however, is that the duplication objection will only reappear with respect to these locative universals. For the locative universals the two spheres are said to possess seem to resemble each other exactly: their natures are exhausted by their being some point in space (Rodriguez-Pereyra 2022, 64). If so, then they will collapse into the same universal—what O'Leary-Hawthorne and Cover call 'pointhood' (1998, 213). Therefore, even when locative universals are included, the two sphere-bundles remain indiscernible, sharing all the same universals, qualitative or locative, as constituents.[26] The duplication problem remains unsolved.[27]

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[25] Note that to establish the numerical distinction between universal-bundles, it is not enough to merely appeal to the fact that the spheres differ *relationally*—i.e., that they stand in certain purely qualitative relations, such as *being a certain distance apart*. For the same bundle could stand in such a relation to itself according to naïve UBT. Thus, proponents of this argument should regard objects as being constituted by locative universals and appeal to difference in constituents to reply to the duplication objection.

[26] Worse, as pointed out by Rodriguez-Pereyra, such a view has the absurd result that 'since all spatial things occupy the same entity, namely the universal pointhood, all spatial things occupy the same place' (2004, 75).

[27] A view in the vicinity is the 'overlapping' defence proposed by Shiver (2014, 909-910), according to which Black's world contains three objects: one unlocated sphere and two located spheres. According to this view, while all three spheres share their 'qualitative parts'—and thus overlap—only the two located spheres possess 'location properties'. Since these objects occupy distinct locations, the location properties they have are presumably different, thereby rendering the spheres discernible.

The problem, again, is that the location properties—understood as universals—seem to resemble one another exactly and would therefore collapse into the same universal. Shiver is, in fact, aware of this difficulty and replies by taking the location properties to be primitively distinct (2014, 911).

2.2.2 The repetition objection

Faced with the duplication objection, the go-to response for bundle theorists is to invoke the metaphysical framework of tropes. The idea is that, by substituting tropes for universals, bundle theorists can adopt a trope-based account—the 'naïve trope-based bundle theory', or simply 'naïve TBT'—and offer a simple reply to the duplication objection (Campbell 1990, 20-21; Ehring 2011, 119).

According to naïve TBT, an object is identical to a bundle of tropes and has a property *F* by having a particular *F*-conferring trope as a constituent. The fact that two objects have the same property *F* is then explained by their having different *F*-conferring tropes as constituents. Recall that the threat posed by the two-sphere world is to give an account of how there could be numerically distinct while qualitatively identical objects within a bundle-theoretic account. By accepting naïve TBT, a straightforward explanation is at hand: if a trope can be duplicated, co-exist with other tropes conferring the same property, then a trope-bundle can likewise be duplicated. The two indiscernible spheres in Black's world can thus be taken as two duplicate trope-bundles that are at a certain distance from each other.

I agree that naïve TBT can account for the two-sphere world. However, as I shall argue, by taking the bundled properties to be tropes, bundle theorists cannot account for a different kind of symmetrical universe in the vicinity (or a different interpretation of the same symmetrical universes—more on this below). If so, then this would constitute a serious difficulty for naïve TBT.

To see what the objection is, it proves useful to make a little detour and consider first a famous reply, proposed by O'Leary-Hawthorne (1995, 193-194), for naïve UBT to solve

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However, not only does such a move increase the number of primitives in the view, the primitive distinction between location properties also seems unintelligible (Rodriguez-Pereyra 2022, 98). I therefore take the solution to be unsatisfactory.

the duplication objection. According to O'Leary-Hawthorne, a universal-bundle, like its constituent universals, is plausibly capable of being located at multiple places at the same time.[28] It follows that objects are also multiply locatable: they can be at a certain distance from themselves. In light of this, what the bundle theorists should do, when faced with the duplication objection, is not to find a way to square with the possibility of the two-sphere world, but rather to *re-describe* that world as containing a single sphere that is at some distance from itself. Therefore, the alleged problematic scenario constitutes no counterexample to PII and does not refute naïve UBT.

This 'one-sphere' solution, though ingenious, fails for a simple reason. As Rodriguez-Pereyra nicely puts it, 'if Black's world contains *two* indiscernibles then it cannot be correctly described as a world that contains no numerically distinct but indiscernible particulars' (2004, 74).[29] A two-sphere world simply cannot be identified with a one-sphere world, for the former contains two while the latter only one object. Given this, if what plague proponents of naïve UBT is a world consisting of two duplicate spheres, then arguing that a world consisting of a single bi-located sphere should be welcomed is at best shifting the subject. The duplication objection remains unsolved regardless of whether the one-sphere world can be accommodated by naïve UBT.[30]

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[28] Why? O'Leary-Hawthorne did not give arguments here, but rather relied on our intuition: according to him, given the capacity of universals to be multiply located, 'it becomes fairly obvious that the bundle theorist must allow that *a bundle of universals can be fully present at many places at once*' (1995, 193). I take this to be a plausible assumption for lightweight bundle theories. As explained, given that the bundling relation is only serving as a bundler but not also a category-transformer, it is hard to see how a bundle can be endowed with capacities associated with other categories. Since I am focusing on lightweight bundle theories here, I will assume that universal-bundles are multiply locatable.

[29] See Zimmerman (1997, 306) and Zhang (2018, 477) for similar criticisms.

[30] Before O'Leary-Hawthorne's defence of naïve UBT, Hacking (1975) also argued that the two-sphere world fails to constitute a counterexample to PII—although not in the context of the bundle theory. According to Hacking, since the two-sphere world presumably instantiates a Euclidean

One might try to defend the one-sphere solution by saying that what is clear in the imagined scenario is no more than there being a 'symmetrical universe' which consists of 'a world in which the pattern of properties exemplified on one side of a certain plane is precisely mirrored on the opposite side' (Zimmerman 1997, 306). Accordingly, it seems legitimate for proponents of naïve UBT to interpret the universe as world of a single bi-located universal-bundle. Until it is established that the symmetrical universe must be identified with a world containing two duplicate spheres, O'Leary-Hawthorne's view remains a viable way to respond to the duplication objection.

This defence rests upon two insightful yet ultimately implausible premises. The first is that Zimmerman's symmetrical universe must be identified with a single *possible world*. It is easy to make this assumption since the only difference between the symmetrical universe and the one-sphere world/the two-sphere world is whether the following is specified: the sphere on one side of the universe is identical to/distinct from the sphere on the other side. However, a possibility with a *nearly* complete description should never be identified with a possibility with a complete description: only the latter constitutes a *possible world*. The symmetrical universe, by contrast, should be seen as a *possibility* which admits of two interpretations: a one-sphere world and a two-sphere world.[31]

The second implausible assumption is that, to account for the symmetrical universe, accommodating one of the two worlds is sufficient. Given that the one-sphere world and

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space, it can be redescribed as a one-sphere world where space is taken to be non-Euclidean. In reply, Adams wrote: 'the most obvious and fundamental difference between Black's imaginary Euclidean (or gently Riemannian) two-globe universe and its tightly curved one-globe counterpart seems to be that in one of them there are two iron globes, and in the other only one' (1979, 16). As can be clearly seen, Adams's response resonates the criticism put forward here.

[31] Zhang has a similar observation here, pointing out that Black's original description and O'Leary-Hawthorne's redescription 'clearly seem to express different possibilities and both the possibilities they express appear to be conceivable' (2018, 477).

the two-sphere world are both genuine possible worlds,[32] bundle theorists cannot claim to be successful if they can accommodate only one of them. The one-sphere solution fails since it explicitly relies on identifying the symmetrical universe with the one-sphere world rather than the two-sphere world. Given that naïve UBT cannot account for the two-sphere world, O'Leary-Hawthorne's view fails to salvage the universal-based bundle theory.[33]

Returning to naïve TBT, in light of what has been said, we can see why it faces a difficulty in accounting for the symmetrical universe as well. For just as naïve UBT cannot fully account for the symmetrical universe by identifying it with the one-sphere world, naïve TBT cannot fully account for it by identifying it with the two-sphere world either. Both the one-sphere world and two-sphere world must be accommodated. However, just as the two-sphere world generates a serious problem for naïve UBT, the one-sphere world also generates a parallel problem for naïve TBT: since tropes are unrepeatable properties, a trope-bundle is likewise unable to be multiply located. But the one-sphere world contains precisely a sphere being at a distance from itself. Therefore, naïve TBT is impotent in accommodating one of the two interpretations of the symmetrical universe. Let us call this the 'repetition' objection to naïve TBT.

2.3 A Dilemma for Bundle Theorists

Let us clarify what has been established so far. As explained, a view usually taken for granted in extant literature assumes there is a single possible world that serves as the best candidate

[32] In Section 2.8, I explain in more detail why we must take the one-sphere world and two-sphere world to be numerically distinct and provide independent grounds for accepting both of them.

[33] For other criticisms of O'Leary-Hawthorne's solution, see Vallicella (1997); Zimmerman (1997); Rodriguez-Pereyra (2004, 74-75); Ehring (2011, 111-116). For potential responses, see Curtis (2014).

for the symmetrical universe. Building upon this thought, one is inclined to claim that the universe contains either two duplicate spheres or one bi-located sphere. But a better way to understand the situation is to take both the one-sphere world and the two-sphere world as equally plausible candidates for the symmetrical universe.[34] The challenge posed by the symmetrical universe is thus more problematic than previously recognised. For proponents of the bundle theory appear to face a dilemma. On the one hand, if the view is developed withing a universalist framework, then it encounters the duplication objection which challenges its ability to accommodate the two-sphere world. On the other hand, if the view is built on a tropist framework, then it faces the repetition objection which challenges its ability to accommodate the one-sphere world. Some modifications are therefore required if the bundle theory is to remain a tenable metaphysical hypothesis.

To reinforce my point, I will now offer an auxiliary argument—or at least an alternative formulation of the same argument—before proceeding to examine whether more sophisticated bundle theories can offer better accounts of the symmetrical universe. Consider a *dual bi-location world* in which two duplicate spheres are each at a distance from themselves. Suppose these spheres occupy four points—*A*, *B*, *C*, and *D*—arranged in a square with side length *s* (see Figure 2. 1). This world is qualitatively identical to a *four-sphere world*, where a distinct sphere is located at each vertex of an exactly resembling square. The only difference is that in the dual bi-location world there are only two spheres: one located at both *A* and *C*, and the other at both *B* and *D*. Intuitively, the dual bi-location world is possible.[35] It follows that neither naïve UBT nor naïve TBT can

[34] Of course, bundle-theoretic accounts that aim to account for actual as opposed to all possible objects, such as that of Casullo (1984, 1988), are not subject to this requirement. But here I follow Rodriguez-Pereyra (2004, 72) in taking the bundle theory to be a theory of the nature of objects which should apply to all objects in all possible worlds.

[35] Provided, of course, that we do not accept some metaphysically loaded conceptions of objects which precludes the possibility of bi-located objects. In Section 2.8, I will argue that such conceptions are implausible.

accommodate it: naïve UBT cannot explain why there are two numerically distinct spheres, while naïve TBT cannot explain why each sphere is at a distance of $\sqrt{2}s$ from itself. Therefore, even if the objectors insist that the symmetrical universe must be identified with either the two-sphere world or the one-sphere world, they still face the problem of accounting for the dual bi-location world.

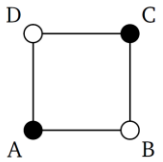


Figure 2. 1 The dual bi-location world

The argument from symmetrical universes and the argument from the dual bi-location world, of course, imply neither naïve UBT nor naïve TBT to be incoherent. Faced with the above dilemma, bundle theorists can always choose to bite the bullet by denying the possibility of either the two-sphere world or the one-sphere world (and the dual bi-location world). However, such moves do constitute a disadvantage for these views. If an alternative account capable of accommodating both the one-sphere world and the two-sphere world (without costs elsewhere) is viable, then we have strong reasons to prefer such a view. In Section 2.7, I will propose precisely such an account. Before that, however, let us consider whether more sophisticated bundle theories can plausibly resolve the problem.

2.4 Symmetrical Universes and Sophisticated Bundle Theories

Confronted with the above objection, bundle theories might diagnose the problem as stemming from an overly impoverished ontology. In light of this, they might turn to sophisticated bundle theories which accept ontological categories distinct from that of

universal or trope to account for symmetrical universes.[36] A slight expansion of ontology may be acceptable if the theoretical gains are significant.

2.4.1 Sophisticated universal-based bundle theories

A paradigmatic sophisticated account is the *instance-view* proposed by Rodriguez-Pereyra, according to which there exist not only universal-bundles but also *instances* of such bundles (2004, 77-79). According to this view, a universal-bundle can be multiply located, while its instances are not—though both are ultimately constituted by the same underlying universals. The idea, then, is that whenever a universal-bundle is located somewhere, an instance of it is also present there. A multiply located universal-bundle thus has multiple instances, each occupying a distinct location. Accordingly, objects can be regarded as instances of universal-bundles rather than as universal-bundles themselves. The duplication objection can be replied by taking the two-sphere world to contain two instances of the same universal-bundle.

The problem is that, by regarding objects as unrepeatable instances rather than as repeatable universal-bundles, the instance-view faces the same problem as that of naïve TBT: it cannot account for the one-sphere world containing nothing but a bi-located sphere. Curiously, the explanatory advantage supposedly monopolised by universal-bundles is diminished when their instances are introduced.

At this stage, proponents of the instance-view might further modify their position by allowing instances to be repeated, which seems to make the view compatible with both the one-sphere world and the two-sphere world: in the former there is a bi-located instance of a universal-bundle while in the latter there are two indistinguishable instances of the same

[36] Note that since we are assuming a lightweight conception of the bundling relation, property-bundles do not constitute a distinct ontological category from the bundled properties.

universal-bundle.

But this modified view runs afoul of a tenet of the bundle theory. According to it, a world of a bi-located sphere is possible since universal-instances are repeatable while a world of two duplicate spheres is possible since universal-instances are duplicable. How much of a bundle-theoretic explanation is this? A core feature of the bundle theory is that it aims to explain facts concerning objects in terms of facts concerning their constituent properties. Yet the modified instance-view simply appeals to irreducible features of objects to account for symmetrical universes. It is doubtful whether it can be count as a genuinely bundle-theoretic account anymore. More importantly, the view renders universals and their bundles redundant: if objects, taken as universal-instances, can do all the explanatory work, then why postulate universals and their bundles in the first place?[37] Why not instead accept a nominalist account according to which objects are intrinsically repeatable and duplicable? Therefore, rather than strengthening the instance-view, allowing instances to repeat risks collapsing it into a position fundamentally at odds with the spirit of the bundle theory.

A variation of the instance-view, proposed by Zhang, holds instead that there exist not only universals but also *universal-instances* (2018, 478-485). If bundle theorists accept this account, then an object can be regarded as a bundle of such universal-instances. Since a universal, according to this view, can by itself constitute more than one universal-instance, the view can respond to the duplication objection by taking the two-sphere world to contain two duplicate bundles of universal-instances (that are ultimately constituted by the same collection of universals).[38]

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[37] Of course, there may be other reasons to postulate universals and their bundles. Proponents of the modified instance-view might thus appeal to such reasons and introduce instances solely to account for the symmetrical universe. My objection would then be that there is a far simpler bundle-theoretic account—one based on amphibians—that is capable of doing the same theoretical work as the modified instance-view.

[38] In general, the two instance-based theories solve the duplication objection by rejecting the

Can this view also respond to the repetition objection? If, on the one hand, universal-instances are taken to be unrepeatable, then arguably bundles of universal-instances cannot be repeated either. Such a view then fails to accommodate the one-sphere world. If, on the other hand, universal-instances are taken to be repeatable, then the view can in principle accommodate the one-sphere world: the world can be regarded as containing a bi-located bundle of universal-instances.[39] However, allowing universal-instances to repeat in this way undermines the motivation for positing universals in the first place: if universal-instances alone can account for both the one-sphere world and the two-sphere world, why posit universals at all? Universals, again, would seem to be redundant entities. Therefore, it is difficult for proponents of the universal-based bundle theory to adopt this modification.

The instance-based views proposed by Rodriguez-Pereyra and Zhang, of course, do not exhaust all possible sophisticated versions of the universal-based bundle theory. However, their incapability to accommodate both the one-sphere world and the two-sphere world seems to have revealed a problem that may be common to such views. By introducing entities belonging to a different ontological category than universals, the theory risks rendering universals redundant. What is needed, it seems, are those entities rather than universals themselves. I conclude that a satisfactory universal-based account is still lacking.

2.4.2 Sophisticated trope-based bundle theories

Let us, then, consider whether a more credible sophisticated bundle theory can instead be constructed within the trope theory. Now, what I am calling 'sophisticated trope-based bundle theories' are rarely—if ever—defended. The reason is presumably that such a view clashes with one of the main motivations for accepting a trope-based ontology, namely to

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principle that any two objects sharing the same constituents must be numerically identical.

[39] Zhang (2018, 479), in fact, writes that he wishes to preserve at least the conceptual possibility of multiply located universal-instances.

maintain a one-category ontology. However, in light of the repetition objection, proponents of the trope-based bundle theory may come to acknowledge the need for some additional entities in their ontology. A trope-based view that seems to be able to accommodate the one-sphere world is thus the following.

Suppose that there are, in addition to the usual unrepeatable trope-bundles, some repeatable *bearers* of trope-bundles. The idea, then, is that whenever a trope-bundle is located at a place, there is a bearer of the trope-bundle, which is also the bearer of all qualitatively identical trope-bundles, that is located there. Both the trope-bundles and their bearers are ultimately constituted by the same underlying tropes—so that this modified view counts as a version of the trope-based bundle theory. Given this, proponents of this view can identify an object with a bearer of a trope-bundle rather than the trope-bundle itself.[40] By positing bearers of trope-bundles, the repetition objection can be solved: the bi-located sphere in the one-sphere world can be regarded as a bi-located bearer of two trope-bundles, each of which occupies a relevant location in the one-sphere world.

The problem, however, is also obvious: by identifying objects with bearers of trope-bundles, which are presumably non-duplicable like universals, this modified trope-based account cannot accommodate the two-sphere world and thus is subject to the duplication objection. The explanatory advantage supposedly unique to trope-bundles is lost once their bearers are introduced.

Faced with this difficulty, proponents of such a view might further revise their view to allow there to be more than one bearer of qualitatively identical trope-bundles. Given this modification, bearers of trope-bundles can be duplicated and thus accommodate the two-sphere world. But then the view will face the same difficulty as the instance-view: if bearers

[40] One way to understand this account is to take it as the 'synchronic' version of the endurantist account based on what Ehring calls 'enduring tropes' (1998, 2001, 2011). I criticise Ehring's view in Chapter 3.

alone can do all the explanatory work, what justification remains for postulating tropes and their bundles in the first place? Why not simply accept a nominalist account which takes objects to be irreducibly repeatable and duplicable? Therefore, this modification is unacceptable to proponents of the trope-based bundle theory.

2.5 Symmetrical Universes and Heavyweight Bundle Theories

Now that we have seen the problems faced by lightweight versions of the bundle theory, let us briefly consider whether heavyweight bundle theories fare better in accounting for symmetrical universes.

Recall that, according to some heavyweight bundle theories, the bundling relation functions not only as a bundler but also as a category-transformer. The heavyweight universal-based bundle theory, for instance, holds that a collection of universals becomes a particular when they are bundled together.[41] This theory thus addresses the duplication objection by taking the two-sphere world to contain two duplicate universal-bundles constituted by the same collection of universals. The problem, however, is that the one-sphere world can no longer be accommodated: by regarding objects as non-duplicable particulars, there cannot be a world containing a bi-located sphere.[42]

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[41] This view invites a couple of worries. First, as noted, it risks collapsing into a version of the rival substratum theory. Second, it is not clear how the very relation that binds universals together could also explain why universal-bundles have features typically associated with non-universals. In particular, it is not clear how repeatable and non-duplicable universals could become unrepeatable and duplicable particulars merely in virtue of being bundled together. A more detailed account of the mechanism of bundling is required.

[42] Note that the heavyweight universal-based bundle theory is not to be confused with the instance-view proposed by Rodriguez-Pereyra (2004). For one thing, the former takes objects to be universal-bundles, while the latter takes them to be instances of universal-bundles. Another difference is that the instance-view need not rely on the nature of the bundling relation to explain why there could be duplicate objects.

The heavyweight trope-based bundle theory faces a parallel problem. A collection of tropes, according to this view, becomes a universal by being bundled together. The theory can thus address the repetition objection by taking the one-sphere world to contain a bi-located trope-bundle. However, such a move makes the theory incapable of accounting for the two-sphere world since trope-bundles, taken as universals, cannot be duplicated. It seems, then, that heavyweight bundle theories are subject to exactly the same problems as their lightweight counterparts.

2.6 Symmetrical Universes and the Pluralist Bundle Theory

Finally, let us consider what can be called the 'pluralist bundle theory'—or 'PBT'—which posits both universals and tropes at the metaphysical ground floor. An object, according to this view, can either be regarded as a universal-bundle or as a trope-bundle. PBT can thus accommodate both the one-sphere world and the two-sphere world: the former contains a bi-located universal-bundle while the latter two duplicate trope-bundles. Given this, PBT appears to offer a more satisfactory account of symmetrical universes than the other views considered so far.

However, PBT cannot accommodate the dual bilocation world, which contains two duplicate spheres that are also multiply located: either the spheres are taken as universal-bundles and thus collapse into a single sphere, or the spheres are taken as trope-bundles and thus cannot be repeated. Given this, PBT still fails to accommodate all kinds of symmetrical universes.

A further concern is that PBT embraces a two-category ontology when one of the main attractions of the bundle theory is its avoidance of the traditional substance-attribute theory. From the standpoint of ontological parsimony, PBT seems no better than the substance-attribute theory, since it too commits us to both particulars and universals—albeit now both are conceived as properties. It is doubtful whether it is worthwhile to posit both universals

and tropes merely to account for some, but not all, symmetrical universes.

In any case, since the view to be advanced below accommodates the one-sphere world, the two-sphere world, and the dual bilocation world, while also preserving a genuinely one-category ontology, bundle theorists should prefer it to PBT.

2.7 Symmetrical Universes and the Amphibian-Based Bundle Theory

I hope I have said enough to make accepting properties that are both repeatable and duplicable—that is, amphibians—seem like a natural solution that bundle theorists should adopt in order to account for symmetrical universes. Therefore, in the remaining sections of this chapter, I turn to defending a novel amphibian-based bundle-theoretic account. As I shall argue, bundle theorists have strong reasons to prefer such a view over the views considered so far.

Amphibians, recall, are properties that function like universals in being repeatable and like tropes in being duplicable. As I have argued in the last chapter, they are not in any sense less fundamental a kind of property than universals and tropes. The bundle-theoretic account that I prefer takes an object to be identical to a bundle of amphibians. So, like naïve UBT and naïve TBT, such a view adheres to a one-category ontology of properties. According to this view, the A question proposed by Campbell, which calls for an account of property possession, can be answered as follows: the fact that an object *a* has a property *F* is explained by the fact that the bundle identified with *a* is constituted by an *F*-conferring amphibian. Let us, then, call this view the 'amphibian-based bundle theory', or simply 'ABT', and apply it to the account of attribute agreement—the solution given to the B question—introduced in the last chapter.

Consider, again, the case of attribute agreement involving two objects, *a* and *b*, that both have the same property *F*. Proponents of ABT can account for this fact in two ways. On the one hand, they can claim that the fact that *a* and *b* are both *F* is explained by the *a*-

bundle and the *b*-bundle's sharing the same *F*-conferring amphibian, say *A*—this is the same explanatory strategy as that of naïve UBT. On the other hand, they can also explain the fact by claiming that the two bundles are each constituted by its own *F*-conferring amphibian, namely, *A* and $A^{\star}$, respectively—this is the same explanatory strategy as that of naïve TBT.[43]

If we adopt a lightweight conception of the bundling relation—which I think we should—then bundles of amphibians, like their constituent amphibians, are also amphibians. In other words, objects, understood as amphibian-bundles, are repeatable and duplicable. Given this, it should be clear now that ABT can accommodate both the one-sphere world and the two-sphere world in a straightforward manner: the former consists of a bi-located amphibian-bundle while the latter two duplicate amphibian-bundles.[44]

ABT thus possesses an advantage over naïve, sophisticated, and heavyweight versions of universal-based and trope-based bundle theories when it comes to accounting for symmetrical universes, as these theories are either subject to the duplication objection or the repetition objection, or else can accommodate these worlds only at the cost of violating some core tenets of the bundle theory.

The merit of ABT is best seen when we compare it with PBT—the only other bundle-theoretic account considered so far that can accommodate both the one-sphere world and the two-sphere world. Although both PBT and ABT can accommodate these two worlds, PBT do so by accepting a two-category ontology of both universals and tropes. By contrast, ABT accommodates both worlds by positing nothing but amphibians at the fundamental level of being, making it a much more economical account. More importantly, ABT has

[43] See Rodriguez-Pereyra (2017, 608-609) for a similar treatment.

[44] The idea that a bundle of repeatable properties can co-exist with duplicate bundles of it is first proposed by Rodriguez-Pereyra (2017, 607-9). However, he does not address whether the one-sphere world can be accommodated or whether this theory is preferable to trope-based bundle theories.

more explanatory power than PBT, since only the former can accommodate the dual bilocation world: according to ABT, such a world contains nothing but two duplicate amphibian-bundles that are both at a distance from themselves. So, ABT is also preferable to PBT when it comes to accounting for symmetrical universes.

In sum, bundle theorists have strong reasons to take the bundled properties as amphibians rather than as universals or tropes to account for symmetrical universes.

2.8 Objections and Replies

I now turn to potential objections. As indicated, the argument from symmetrical universes rests upon two premises, namely that (i) the two-sphere world and the one-sphere world are both genuine possible worlds and that (ii) they are distinct possible worlds. In light of this, to object to my argument, one might try to establish that either the two-sphere world or the one-sphere world should be rejected, or that they turn out to be the very same world. Let us consider these objections in turn.

2.8.1 The two-sphere world defended

Black (1952, 156)—and many contemporary metaphysicians—take the possibility of the two-sphere world to rest on our imaginative intuition. It seems that we can conceive of a world containing nothing but two spheres that are spatially separated yet share all their qualitative intrinsic properties. If we grant a connection between imaginative conceivability and metaphysical possibility, then such a symmetrical universe certainly appears possible.

The problem is that it does not follow from the undeniable possibility of the symmetrical universe that it must be regarded as a world containing two duplicate rather than one bi-located sphere. As explained in Section 2.2.2, one might object that, since our imaginative intuition does not concern whether the indiscernible spheres in that world are numerically

identical or distinct, all that is guaranteed is a possible scenario compatible with both the two-sphere world and the one-sphere world. Accordingly, the objector may follow Hacking (1975) and O'Leary-Hawthorne (1995) in regarding the symmetrical universe as a world containing a single bi-located sphere. Therefore, to maintain that the two-sphere world is possible, mere intuition is insufficient and some distinct argument is required.

I suspect that many who believe in the possibility of the two-sphere world will be unmoved by this objection. Instead, they are likely to insist that our imaginative intuition does involve the numerical distinctness of the indiscernible spheres. If so, the dispute will collapse into a mere disagreement about which intuitions are available to rational beings like us. Since I lack a clear intuition as to whether the numerical distinctness of indiscernible objects is something we can grasp intuitively, I shall not assume that the possibility of the two-sphere world is grounded in intuition alone.

Fortunately, a number of arguments have been proposed for the possibility of the two-sphere world.[45] Since I have nothing new to add here, I shall not reiterate those arguments but will instead focus on what I take to be the most promising argument, namely the one offered by Rodriguez-Pereyra (2022, 82-86), which can be summarised as follows.

First, it seems undeniable that we can conceive of a world containing at least one sphere having certain *intrinsic pure properties*, such as *being made of iron*, *being spherical*, *having diameter D*, *having colour C*, *having temperature T*, *having mass M*, etc.[46] Unlike the claim that we can directly conceive of a world containing two duplicate spheres, this premise should be acceptable to those who regard the symmetrical universe as the one-sphere world as well as those who regard it as the two-sphere world.

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[45] For a survey of these arguments, see Rodriguez-Pereyra (2022, 75-100).

[46] Intrinsic pure properties, according to Rodriguez-Pereyra, are intrinsic qualitative properties such that the possession of them does not consist in being related in a certain way to any object or objects in particular (2022, 21).

Second, if it is possible that there is at least one sphere having such intrinsic pure properties, then it is also possible that there are two objects having those properties. Why? Consider how this claim might be false. One possibility is when some intrinsic pure properties of the spheres are such that having them is sufficient for being a certain object in particular (Rodriguez-Pereyra 2022, 84). If so, then there cannot be more than one object having such properties. However, the properties had by the sphere listed above do not seem to possess such individuating power: they concern *how* the object is rather than *what* the object is.

Another possibility is when some properties had by the sphere are individually or jointly unshareable. The only plausible candidate here seems to be the *size* and *shape* of the spheres: since the size and shape of spacetime arguably constrain the size and shape of objects, there might be some large sizes and shapes that are individually or jointly unshareable (Rodriguez-Pereyra 2022, 85). However, even granting there are such sizes and shapes, the second premise is still true. For what is required by the second premise is no more than there being *some* sizes and shapes that are individually and jointly shareable. We are free to stipulate that the size and shape of the spheres in the symmetrical universe fall into this category.

Are there other ways to refute the second premise? It is hard to see. As Rodriguez-Pereyra explains, 'intrinsic properties are such that having them is independent of how the rest of the world is' (2022, 85). It is thus reasonable to suppose that an object's having the listed intrinsic pure properties does not exclude other objects from having the same properties. It seems, then, that we have good reason for accepting the second premise. It follows that there could be two spheres having the same intrinsic pure properties. The two-sphere world is possible.[47]

[47] Rodriguez-Pereyra (2022, 82-83), in fact, present this argument as an argument against a version of PII: since there could be distinct spheres sharing the same intrinsic pure properties, PII formulated in terms of intrinsic pure properties is refuted. Since my goal is not to determine whether any

2.8.2 The one-sphere world defended

Are there also reasons to accept the one-sphere world? Here I shall offer two reasons in favour of such a possibility.

The first reason concerns the parity of the one-sphere world and the two-sphere world within a plausible theory of metaphysical possibility. All parties should agree on at least the following: there is a genuine possibility in the vicinity of the one-sphere world and the two-sphere world, namely a symmetrical universe that contains a sphere on one side of it and an indiscernible sphere on the other. Such a possibility need not by itself determine whether the spheres in it are numerically identical or distinct, and is thus compatible with both the one-sphere interpretation and the two-sphere interpretation. Now, it seems that a plausible theory of metaphysical possibility should not by itself preclude the one-sphere interpretation but not the two-sphere interpretation or *vice versa*. The reason is that, if the symmetrical universe is possible, then whether the spheres in it are identical or distinct is arguably among those facts whose obtaining or not obtaining determines the realm of possible worlds in the first place. In other words, when it comes to interpreting worlds compatible with the symmetrical universe, a plausible theory of metaphysical possibility should imply that the spheres are identical in some such worlds and distinct in others, rather than that they are identical/distinct in all such worlds. Therefore, given that the symmetrical universe is possible and that there are reasons to accept the two-sphere world, there are also reasons to accept the one-sphere world.[48]

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version of PII is true, allow me to omit the relevant parts.

[48] Consider the useful metaphor of God determining which possible worlds there are. Given that a symmetrical universe with its qualitative distribution is possible, the question remains whether the indiscernible spheres within it are identical or distinct. For reasons of parity, it seems that, since identity/distinctness is arguably a fundamental notion, God should admit both a possible world in which the spheres are identical and one in which they are distinct.

The second reason concerns a particular case of multiply located objects: extended simples.[49] If it can be shown that extended simples are possible, then a world containing nothing but a bi-located object is possible as well.[50] There are, in fact, a number of arguments in favour of the possibility—or even the actual existence—of extended simples.[51] The one I find most promising is the *Humean* argument based on a plausible combinatorial principle, which can be summarised as follows (Sider 2007, 52-53). First, it seems plausible to suppose that *location* or *occupation* is a fundamental relation holding between objects and spatial points. Second, it seems also plausible to suppose that any pattern of instantiation of a fundamental relation is possible. It follows that there can be some simple objects that are located at more than one spatial point at the same time.[52] In fact, the argument seems to

[49] Extended simples are partless objects extended through spacetime. Following McDaniel (2007, 134), we can distinguish between two kinds of extended simples: a *multi-locator* that is located at multiple points whose fusion is an extended region and a *spanner* that is directly located at an extended region. Apparently, what is needed for my argument is the possibility of multi-locators rather than spanners. Therefore, in what follows I shall focus on extended simples as multi-locators.

[50] It might be objected that the possibility of multiply located *spheres* does not follow from the possibility of extended simples since spheres are composite rather than simple objects. In response, it should be noted that the relevant sphere, assuming that it is an homogeneous object, might turn out to be an extended simple (Markosian 1998). More importantly, for my purposes, it does not matter whether the symmetrical universes contain simple or composite objects. Therefore, the arguments above can instead be formulated in terms of symmetrical universes containing duplicated and repeated simples.

[51] See, for instance, Markosian (1998); Parsons (2000, unpublished); Simons (2004); Braddon-Mitchell and Miller (2006).

[52] See McDaniel (2007) and Saucedo (2011) for different versions of the argument. Exactly which combinatorial principle is at issue, and how the relevant Humean argument for extended simples should be constructed, is debated—see Lo and Lin (2023) for a recent discussion of unsuccessful construals of the argument and possible remedies. Sider, in fact, acknowledges that 'Combinatorialism as a full-blown analysis of modality faces well-known problems' (2007, 52). However, he also claims that 'everyone should admit some combinatorial element to possibility, and it seems likely that that element will be enough for the argument for extended simples' (2007, 52-53). Here I side with Sider and am content to assume that some such element is viable.

support not only the possibility of extended simples (as multi-locators) but also that of multiply located objects in general: if location is a fundamental relation and any pattern of instantiation of a fundamental relation is possible, then it follows that an object can be located at more than one spatial point/region. Given this, a world containing nothing but a bi-located sphere is possible as well.[53]

In any case, the following is an attempt at reconstructing the Humean argument for the possibility of extended simples. Let F and G be intrinsic properties; let R be an accidental, fundamental relation; let x and y be contingently existing non-overlapping entities. Then the relevant combinatorial principle says that it is not the case that, necessarily, xRy only if (if Fx then Gy)—this is a modified formulation of the (NNC*) principle entertained by Lo and Lin (2023, 556). The Humean argument can then be understood as follows. Suppose for *reductio* that necessarily, if x is located at y, then, if x is mereologically simple, then y is mereologically simple. Given that the relevant combinatorial principle is true, either mereological simplicity is not an intrinsic property of x, or mereological simplicity is not an intrinsic property of y, or location is not an accidental relation, or location is not a fundamental relation. Yet not only is mereological simplicity an intrinsic property of both x and y, but location is plausibly an accidental, fundamental relation. We therefore get a contradiction. So, by *reductio*, possibly, some object x that is mereologically simple is located at some region y that is not mereologically simple. Extended simples are possible.

The objector might demur that the relevant combinatorial principle is too strong if no restrictions are placed on which kinds of entity are suitable to instantiate which fundamental relations. For instance, the principle appears to allow an abstract entity, such as the number two, to be located at some spatial regions (McDaniel 2017, 112). In light of this, a modified principle that restricts recombination to the *right* ontological categories is preferable (McDaniel 2017, 112-113). In the current case, when R is taken to be the location relation, then x can only be an entity that can occupy, such as a material object, and y can only be an entity that can be occupied, such as a spatial region. In what follows, I shall assume that some account along this line of thought is viable. If so, then this modified account also supports the argument for extended simples.

[53] A similar argument has been used to support the possibility of *enduring* objects—that is, diachronically multiply located objects (Eagle 2016, 2225-6). If reasons for accepting the possibility of synchronically repeatable objects are also reasons for accepting the possibility of diachronically repeatable objects—perhaps because the distinction between spatial and temporal points is not fundamental, as special relativity seems to suggest—then those who deny the possibility of synchronically multiply located objects (and thus the one-sphere world) must also deny the possibility of enduring objects. I take this to provide a dialectical advantage for my view, since ABT need not preclude the possibility of enduring objects. (More on this in Chapter 3.)

Let us turn to potential objections. First, it might be objected that the concept of a multiply located object is incoherent, since objects are by their very nature unrepeatable: they are, so to speak, *concrete particulars*.

But the claim that objects are unrepeatable begs the question against various universal-based bundle theories and the amphibian-based bundle theory explained above. According to such views, objects *are* capable of having multiple locations. Since whether objects can be repeated is precisely what is at issue, it is no good to suppose they are unrepeatable.

But then one might wonder why we are inclined to call them 'concrete particulars' in the first place. The reason, I suggest, is that when we use the term 'concrete particulars' in this context, we are operating with a weaker concept of particularity—one that does not rule out the possibility that some repeatable objects are particulars. On this weaker conception, to be a particular amounts roughly to being an *object* or *entity that has properties*. In any case, the idea that objects are unrepeatable particulars may reflect nothing but a pre-theoretic stance which, upon serious philosophical reflection, one may find implausible and turn to a more neutral notion.[54]

Second, one might object that we should not accept the possibility of multiply located objects because we lack empirical evidence of their existence: we never encounter such entities in experience.

This is a typical case of inferring impossibility from non-actuality. To be sure, what is actual (or not actual) may provide some reason for believing that something is possible (or not possible). However, a plausible theory of metaphysical possibility may nevertheless allow for the possibility of non-actual entities on the basis of independently motivated metaphysical principles. Sider's argument for extended simples, for instance, appeals to

[54] See O'Leary-Hawthorne (1995, 194-195) for a similar point; see also Parsons (unpublished) for similar objections and replies.

principles concerning location and recombination.

More importantly, this objection rests on a debatable assumption, namely that our everyday experience implies that multiply located objects do not exist. Proponents of multiply located objects may contest this claim. Since what we can access empirically are no more than the qualitative features of objects—features that do not determine whether any two indiscernible objects are numerically identical or distinct—it may turn out that what we take to be duplicate objects are in fact multiply located objects. Therefore, the objection fails to establish the impossibility of multiply located objects.

2.8.3 The distinctness of the two-sphere world and the one-sphere world

It seems, then, that both the two-sphere world and the one-sphere world are possible. Still, it might be objected that the argument from symmetrical universes ultimately fails, since these worlds are not genuinely distinct worlds but rather two *descriptions* of the same world. If so, then—regardless of whether bundle theorists should prefer the one-sphere description or the two-sphere description—the amphibian-based account is at best more plausible than either universal-based or trope-based accounts, but not both. Thus, it lacks the alleged advantage in accounting for symmetrical universes.

That there are two inconsistent descriptions is undeniable. The question is whether they also correspond to two distinct worlds. My main reason for thinking that they do is the following. Consider the relevant collections of facts that must obtain or exist in order for the one-sphere description and the two-sphere description to be true respectively. A plausible claim, then, seems to be that the one-sphere world and the two-sphere world turn out to be the same world only if the facts required for the one-sphere description and the two-sphere description to be true are identical—or at least not incompatible. Afterall, possible worlds can be seen as constructions from collections of possible facts. The obvious candidate here, of course, is the collection of qualitative facts obtaining in both worlds,

namely those constituting the symmetrical universe in Zimmerman's sense. However, the facts associated with this symmetrical universe makes true neither the one-sphere description nor the two-sphere description. For the former to be true, a further fact must obtain, namely the fact that the spheres are numerically identical. But then the extended collection of facts cannot make true the the two-sphere description. Parallelly, for the two-sphere description to be true, a distinct fact must obtain, namely the fact that the spheres are numerically distinct. But then the extended collection of facts cannot make true the the one-sphere description. It seems, then, that the facts required for the two descriptions to be true are incompatible. Therefore, there are not only two descriptions but also two worlds.

Let us close by considering possible reasons for thinking that there is only one world. One motivation may come from *qualitativism*—the thesis that reality is entirely constituted by qualitative facts (Dasgupta 2009, 2017; Russell 2016, 2018).[55] According to this view, since objects do not exist, there are no facts whatsoever about whether any two objects are identical or distinct.[56] And if there are no facts about whether any two objects are identical

[55] If we follow Dasgupta (2009, 2017) in taking any fact whose obtaining does not depend upon any *particular* object as a qualitative fact, then general facts such as $(\exists x)(\exists y)(x = y \,\&\, Fx \,\&\, Fy \,\&\, Rxy)$ and $(\exists x)(\exists y)(x \neq y \,\&\, Fx \,\&\, Fy \,\&\, Rxy)$—where F corresponds to the intrinsic qualitative properties of the spheres in the symmetrical universe and R the relation of (say) *being two miles from*—turn out to be qualitative facts. Since these facts are clearly distinct, qualitativists who adopt this account of qualitative facts cannot identify the one-sphere world with the two-sphere world, for each contains facts that cannot obtain in the other. For the sake of argument, I shall assume that the objector can in some sense regard such facts as either non-obtaining or non-qualitative.

[56] There are, in fact, two ways of developing qualitativism. One may adopt either *Existence Qualitativism*, the thesis that all facts are qualitative facts, or *Priority Qualitativism*, the thesis that all *fundamental* facts are qualitative facts—see Teitel (2026) on this distinction. According to Priority Qualitativism, facts such as $(\exists x)(\exists y)(x = y \,\&\, Fx \,\&\, Fy \,\&\, Rxy)$ and $(\exists x)(\exists y)(x \neq y \,\&\, Fx \,\&\, Fy \,\&\, Rxy)$ obtain, although they are, as we are assuming here, non-qualitative and hence non-fundamental. It follows that this form of Priority Qualitativism cannot identify the one-sphere world with the two-sphere world, since each contains facts that cannot obtain in the other. For the sake of argument, let us focus on Existence Qualitativism.

or distinct, the two-sphere world and the one-sphere world will turn out to be the same world, namely a world in which the qualitative distribution on one side is exactly mirrored on the other. Therefore, by accepting qualitativism, one can save the sameness of the two-sphere world and the one-sphere world.

However, *bundle theorists* cannot appeal to qualitativism to secure the identity of the one-sphere world and the two-sphere world. The reason is that qualitativism does not merely eliminate the distinction between the two worlds. As said, it also eliminates the category of objects altogether. Yet the central aim of the bundle theory is precisely to construct objects out of fundamentally existing properties rather than to dispense with them. Invoking qualitativism would therefore be self-defeating for bundle theorists.

In light of this, one might instead appeal to a related but weaker thesis, namely, *anti-haecceitism*—the modal thesis according to which worlds that are alike qualitatively are alike *simpliciter*. The bundle theory has a natural tendency toward this view, for it purports to construct a theory of objects out of nothing but fundamentally existing properties.[57] If anti-haecceitism is accepted, then it might be claimed that there is in fact only one world in the vicinity, as the one-sphere world and the two-sphere world are qualitatively identical.[58]

However, there is a way for bundle theorists to preserve the spirit of anti-haecceitism without identifying the two worlds. The main motivation behind anti-haecceitism is to avoid *purely haecceitistic differences*, that is, scenarios that differ only in which particular

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[57] Armstrong, for instance, regards the universal-based bundle theory as a version of anti-haecceitism (1989a, 59).

[58] This argument assumes that there are no duplicate worlds. Anti-haecceitism, if true, entails only that the two-sphere world and the one-sphere world are either identical or duplicates. Thus, the argument fails if the one-sphere world and the two-sphere world turn out to be duplicate worlds. Now, whether duplicate worlds should be accepted is a controversial issue. And I am inclined to follow Lewis in adopting an agnostic stance on the matter (1986b, 224). In any case, let us grant the objector the point and assume that there are no duplicate worlds.

objects are involved. To illustrate, let us borrow an example from Armstrong (1989a, 58; 1997, 107-108): consider two relatively simple worlds, w and $w^{\star}$, that both contain nothing but two objects, a and b, as well as two monadic properties, F and G. Let w be a world in which only $Fa \,\&\, Gb$ (and its conjuncts) obtain, and $w^{\star}$ be a world in which only $Fb \,\&\, Ga$ (and its conjuncts) obtain. The anti-haecceitists will want to deny that w and $w^{\star}$ are distinct worlds since what we have here are two merely 'verbally different formulations to which no ontological distinction corresponds' (Armstrong 1997, 108). There is, according to them, only one possible world which contains an F-object and a G-object.

However, accepting this no-purely-haecceitistic-difference principle does not require embracing full-strength anti-haecceitism. For one can instead endorse a more moderate view—what I call 'semi-anti-haecceitism'—according to which non-qualitative facts globally supervene on both qualitative facts and *numerical facts*, that is, facts concerning how many entities a world contains.[59] Returning to Armstrong's example, proponents of semi-anti-haecceitism can preserve the anti-haecceitistic intuition that w and $w^{\star}$ are nothing but two descriptions of a single world, given that they share all the same numerical and qualitative facts: each contains two objects, one possessing F while the other G. Yet semi-anti-haecceitism is also compatible with the distinctness of the one-sphere world and the two-sphere world, since the numerical facts in them are different: one contains one, while the other two, objects.[60] Therefore, bundle theorists who adopt semi-anti-haecceitism can preserve the anti-haecceitistic intuition while maintaining the numerical difference between the one-sphere world and the two-sphere world. So, the argument from

[59] An assumption in the objection based on anti-haecceitism is that numerical facts are non-qualitative facts. However, some metaphysicians prefer to regard them as qualitative (Legenhausen 1989; Skow 2008; Cowling 2015). Let us grant the objector this point.

[60] If the 'purity' principle, championed by Sider (2011), holds, then one might object that this kind of fact cannot be among the ultimate supervenience base, as the notion of 'object' is non-fundamental. In such cases, bundle theorists can simply replace 'objects' with 'bundles of properties' or 'collections of properties', and the point still holds.

anti-haecceitism also fails.

2.9 Conclusions

Given what has been said, it seems that the one-sphere world and the two-sphere world constitute genuine yet distinct possible worlds. That said, I do not expect objectors to be persuaded by my arguments. For instance, some hardcore universalists might still prefer to reject the two-sphere world and accept naïve UBT, while some hardcore trope theorists might prefer to reject the one-sphere world and accept naïve TBT. My hope, then, is that, at least for those who regard both the idea of multiply located objects and that of duplicated objects as worth taking seriously—which is by no means an absurd stance—I have provided a way for them to accept a one-categorial bundle theory without forcing them to choose between them.

In any case, I shall now offer a final, methodological argument for taking the one-sphere world and the two-sphere world to be genuine yet distinct possible worlds. Suppose that one has absolutely no intuition on the issue above and finds every principle and argument for either the one-sphere world or the two-sphere world or their distinctness to be dubious. It seems natural, then, for our unpersuaded friend to be inclined to the *default* view on the issue. But what is the default view here? Consider the following candidates:

(i) the two-sphere world exists whereas the one-sphere world does not, and the symmetrical universe is identical to the two-sphere world;
(ii) the one-sphere world exists whereas the two-sphere world does not, and the symmetrical universe is identical to the one-sphere world;
(iii) both the two-sphere world and the one-sphere world exist, and the symmetrical universe is compatible with both worlds.

It seems to me that, given that something in the vicinity of both worlds, namely the symmetrical universe, is possible, the third option should be the most methodologically appropriate candidate. After all, barring any independent reason to take the spheres in the symmetrical universe to be identical or distinct, assuming either the first or the second option, and thus precluding either the one-sphere world or the two-sphere world, seems to be in some way *biased*.

If so, then the amphibian-based view is to be preferred to its rivals based on universals and tropes, since only it can accommodate both worlds while maintaining a genuinely one-categorial bundle theory. This should constitute a strong reason for bundle theorists to prefer taking properties to be amphibians. In the second part of the thesis, I argue for this point further by extending the amphibian-based account to the domains of persistence and dispositions.

Part II

Extensions

3

Persistence

3.1 D-Properties

In this chapter, I develop an amphibian-based account of property and object persistence. As I shall argue, the modal flexibility uniquely enjoyed by amphibians allows their proponents to account for persistence in ways that are better than that of universal theorists and trope theorists.

Let me start by introducing two concepts that will be of utmost importance in this chapter, namely *diachronic repeatability* and *diachronic duplicability*. Roughly, a diachronically repeatable property is a property that can have multiple temporal locations, whereas a diachronically duplicable property is one that can have temporal duplicates. We can conceive of these properties as temporal parallels of properties that are *simultaneously* repeatable and duplicable—that is, properties discussed in previous chapters. Recall that when I introduced the concept of amphibians as properties that constitute a fundamental category distinct from that of (strong) universals and (strong) tropes, I availed myself of a fine-grained theory of property categorisation according to which four kinds of property are defined in terms of two modal features, namely repeatability and duplicability (Table 1. 1). What I meant there, strictly speaking, are *synchronic repeatability* and *synchronic duplicability*.

In a similar vein, we can define four corresponding concepts of properties in terms of how they behave temporally (Table 3. 1). According to this account, a D-universal is a property that can be wholly present, but cannot have multiple duplicates at different times; a D-trope is a property that can have multiple duplicates, but cannot be wholly present at different times; a D-amphibian is a property that can be wholly present and have multiple duplicates at different times; and a D-unicum is a property that can neither be wholly

present nor have multiple duplicates at different times. The prefix 'D' indicates that these properties are *diachronically* repeatable/unrepeatable or duplicable/non-duplicable. To avoid confusion, I shall use 'S-universal', 'S-trope', 'S-amphibian', and 'S-unicum' to refer to the synchronically repeatable or unrepeatable and duplicable or non-duplicable properties considered so far (although, as we shall see shortly, this distinction may not reflect a genuine ontological distinction).

Table 3. 1 Categories of D-properties

D-Property	Diachronically repeatable	Diachronically unrepeatable
Diachronically non-duplicable	1. D-universals	3. D-unicums
Diachronically duplicable	2. D-amphibians	4. D-tropes

The main goal of this chapter is to defend an account of persistence based on D-amphibians. But before spelling out the details, it will be helpful to say something about the relationship between D-properties and S-properties. In particular, taking universals as our example (similar points apply to other categories), let us consider two questions: (i) *in what sense is a D-universal a 'universal'?* and (ii) *are D-universals as fundamental as S-universals?*

Let us begin with the first question. Simply calling a property a 'D-universal', of course, does not make it a genuine universal. Without sufficient grounds for taking an alleged D-universal to be a genuine universal, the label 'D-universal' is not only arbitrary but can also be misleading. For instance, an argument for the so-called 'D-universals' might be mistakenly taken as an argument for genuine universals.

So, are there reasons to regard D-universals as genuine universals? Here is an argument from analogy. S-universals are, no doubt, genuine universals, since the essential features of paradigm cases of S-universals are what fix the meaning of 'universal' in the first place.

These essential features, as explained in Chapter 1, are synchronic repeatability and non-duplicability. Now, D-universals are also essentially repeatable and non-duplicable, although in a temporal as opposed to a spatial sense. Therefore, if we are happy to extend the notion of 'universal' to include not only spatial but also temporal cases, D-universals can count as genuine universals as well.

But why should we extend the notion of 'universal' to include temporal cases? Why not restrict universals to properties that are synchronically repeatable and non-duplicable? One reason is that S-universals and their spatial locations are intuitively distinct: an S-universal is located at, rather than constituted by, its spatial location(s). A universal-cum-location, by contrast, would be a state of affairs instead of a universal. If so, then unlike *being repeatable* and *being non-duplicable*, which are essential features of S-universals, *being spatial* would seem to be a mere accidental feature of them.

Moreover, even if one insists on regarding S-universals as essentially spatial, there might still be a reason to accept a more fundamental notion from which both S-universals and D-universals derives. The reason is that S-universals and D-universals are in a sense ontologically on a par, given the seemingly plausible view that spatial and temporal locations of an entity are derivative on its spatiotemporal locations. The idea is that, if the distinction between spatial and temporal locations is non-fundamental, then there is no reason to take an entity to be essentially synchronically but not diachronically repeatable and non-duplicable, and *vice versa*.[61] Accordingly, it seems better to take properties that are repeatable and non-duplicable, whether synchronically or diachronically, as universals.

[61] Those who deny that S-universals and D-universals are both universals must explain why such properties behave so differently in their interaction with the spatial and temporal dimensions. In particular, merely stating that space and time are ontologically different is insufficient. What is required is an account of which specific features of space and time are responsible for this difference. This, in turn, supports the opposite view, on which no such explanation is needed: universals are simply repeatable and non-duplicable properties, regardless of how space and time might differ.

Let us, then, turn to the second question, which concerns whether D-universals are as fundamental as S-universals. If, as I have proposed, the distinction between S-universals and D-universals depends on the non-fundamental distinction between their spatial and temporal locations, then it follows that S-universals are just as fundamental as D-universals. (Note that here we are concerned with the ontological status of D-universals and S-universals: the question is whether they occupy the same level in the fundamentality hierarchy. The fact that the essential features of S-universals are what fix the meaning of 'universal' in the first place is irrelevant to this issue.)

Given this, one might wonder whether 'D-universals' and 'S-universals' are themselves among the most fundamental notions, or whether they are instead metaphysically explainable in terms of other notions. I am, in fact, inclined to the view that they are not fundamental. Rather, they can be derived from a non-prefixed notion of 'universals'. This can already be seen in the foregoing characterisation of universals as properties that are repeatable and non-duplicable *simpliciter*. Some of them are repeatable and non-duplicable with respect to the temporal dimension, while others are repeatable and non-duplicable with respect to the spatial dimension. But such a distinction is a merely useful one.

I do not have a decisive argument against the alternative view that takes D-universals and S-universals as constituting distinct fundamental categories, while treating non-prefixed universals as constituting a non-fundamental category with D-universals and S-universals as its subcategories. However, proponents of this view must explain why and how not only repeatability and non-duplicability, but also spatiality and temporality, could constitute part of the essence of D-universals and S-universals. As noted above, spatial and temporal locations cannot be literal constituents of universals, since that would turn them into states of affairs. And even if a satisfactory account could be provided, the view would still need to explain exactly what differences between their spatial and temporal locations could underlie the distinction between these two allegedly fundamental kinds of property. My suspicion is that this would require committing to a substantial metaphysics of space and time.

Compared with my preferred view—which imposes no such requirements on the nature of space and time—this alternative account appears less attractive.[62]

3.2 Three-Dimensionalism and Four-Dimensionalism

The debate over persistence is frequently framed as a dispute between two opposing views: three-dimensionalism (3Dism), or *endurantism*, and four-dimensionalism (4Dism), or *perdurantism*. David Lewis offers the canonical definitions of them:

> Let us say that something *persists* iff, somehow or other, it exists at various times; this is the neutral word. Something *perdures* iff it persists by having different temporal parts, or stages, at different times, though no one part of it is wholly present at more than one time; whereas it *endures* iff it persists by being wholly present at more than one time. (Lewis 1986b, 202)

I find Lewis's definitions remarkably resilient. Recently, Wasserman (2016) has provided a very persuasive defence of Lewis's definition of 4Dism. Consider what might be called an 'ontological conception' of 4Dism, according to which 4Dism is defined as the view that there are temporal parts of persisting entities. So understood, 4Dism is an *ontological* claim about what sorts of things there are. But crucially this is not Lewis's view: according to Lewis, 4Dism is rather the view that a thing persists by having different temporal parts at different times, where the 'by'-locution suggests that this is an *explanatory* claim about what it is for a thing to persist, not an ontological claim about what sorts of things there are (2016, 244). Indeed, for a thing to persist by having different temporal parts at different times, there must be those temporal parts in the first place. But 'it is one thing to say that persisting objects have temporal parts whenever they exist; it is another thing to say that

[62] Another advantage of taking non-prefixed universals rather than both D-universals and S-universals as fundamental is that such a view is ideologically simpler, accepting fewer primitives.

objects persist because they have temporal parts' (2016, 245). So, Lewis's conception—which Wasserman calls the 'explanatory conception'—is distinct from the ontological conception: the former 'goes beyond' the latter (2016, 245).

Why, then, does the explanatory conception provide a better definition of 4Dism? Wasserman offers the following reason: 'perdurantism has always been presented as a *theory* of persistence and theories are, by their very nature, explanatory' (2016, 245). The issue proponents of 4Dism have been concerned with is to give an adequate account of what it is for an entity to persist, which is by itself orthogonal to the issue of whether temporal parts of such an entity exist. Consider, for instance, a case in which nothing ever has a temporal part. Even in such a case, 4Dism could still be true: it might be that things persist by having temporal parts, even though nothing actually persists.[63]

A different—and, I claim, better—reason to prefer the explanatory conception is the following. Compare perdurantism considered so far with another form of 4Dism, namely *exdurantism*, or the *stage theory*, which shares with perdurantism the same ontology of temporal parts or stages (Hawley 2001; Sider 2001). Proponents of exdurantism typically maintain that, contrary to what perdurantists claim, persisting things are not fusions of temporal parts or stages, but rather the temporal parts or stages themselves. Such entities do not strictly persist, or persist only in a derivative sense, by having temporal counterparts at different times. Few would deny that the perdurantist-exdurantist debate is substantive, despite the fact that the two views share the same underlying ontology. What are we to make of this? The best answer, I suggest, lies in the explanatory conception: theories of persistence are concerned with what it takes for an entity to exist at different times, rather than with what kinds of things there are.[64]

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[63] See Wasserman (2016, 245) for two additional reasons supporting the explanatory conception, one of which is based on an analogy between space and time, and the other on the historical usage of explanatory terms by philosophers when describing 4Dism.

[64] Another case that illustrates the superiority of the explanatory conception in general rests on the

What about 3Dism? In light of what has been said about 4Dism, I suggest that we adopt the same attitude toward 3Dism, taking it to be the explanatory claim that an entity persists in virtue of being wholly present at more than one time. This explanatory conception not only accords with Lewis's canonical definition, but also provides a better formulation of 3Dism than the corresponding ontological conception, according to which 3Dism is understood as the claim that there are things that can be diachronically multiply located. Of course, to adopt such a view 3Dists must equip themselves with an ontology which provides sufficient resources for positing entities that can be diachronically multiply located. But it is one thing to say that there are such diachronically repeatable things, yet another thing to say that things persist in virtue of being wholly present at different times.

Interestingly, Wasserman takes a different stance on how 3Dism should be formulated. According to him, since no satisfactory positive account of *whole presence* can be given, 3Dists had better adopt a purely negative definition, taking *being wholly present at a time* to mean *existing at a time without having a proper temporal part at the same time* (2016, 247). The consequence, then, is that 3Dism fails to be an explanatory conception, since, on this view, to endure amounts to existing at different times without having any temporal part at those times—a characterisation that can hardly be seen as explanatory (2016, 247-248). Based on this, Wasserman makes the rather bold claim that endurantism should not be seen as a theory of persistence at all, but merely as a denial of perdurantism (2016, 248). The 3Dist-4Dist debate, then, boils down to 'a disagreement over whether a single theory—the perdurantist theory—is correct' (2016, 248).

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viability of a distinct theory of persistence, namely 'terdurantism' (Miller 2009) or 'transdurantism' (Miller 2016; Daniels 2019). Roughly, the idea is that objects persist by being temporally extended simples/spanners. Whether or not this view is ultimately preferable to other theories, it appears to be a viable account of persistence. But surely it does not follow from the mere existence of temporally extended simples that objects persist by being those entities. It seems legitimate to postulate temporally extended simples without also adopting terdurantism/transdurantism. But to acknowledge this distinction one has to abandon the ontological conception.

Wasserman's argument can be challenged. First, it relies on what is now somewhat outdated assumptions. As subsequent discussions make clear, there are alternative definitions of whole presence that do not appear problematic. For instance, it is not obvious that definitions of 3Dism in terms of locative notions such as *exact location* must fail (Eagle 2016; Miller 2016; Costa 2017). Another option available to 3Dists is simply to take whole presence as a primitive notion—a view that is not obviously problematic. Note that the 4Dist must also provide an account of what it is for a temporal part to exist at a time. And, as a temporal-parts theorist, the 4Dist will presumably impose an additional restriction when applying their preferred locative notion, namely that a temporal part cannot exist at more than one time. Whatever the account of location may be, why could the 3Dist not simply adopt the same locative notion as the 4Dist, while dropping this restriction and allowing persisting things to exist at more than one time?

Second, construing 3Dism as a mere denial of 4Dism threatens to undermine the original motivation for 3Dism. One central motivating idea behind 3Dism is that it captures the intuition that a thing persists by being strictly identical over time. However, once one adopts the purely negative definition of whole presence, this important insight is lost. Persistence is no longer understood in terms of strict identity over time, but rather in terms of the absence of temporal parts at the relevant times. Yet it seems unfair to regard 3Dism as a theory primarily about the non-existence of something—namely, temporal parts—that its proponents do not wish to posit and may not even regard as intelligible.

Therefore, it seems better to understand 3Dism as an explanatory claim about persistence, according to which things persist in virtue of being wholly present at more than one time. The 3Dist-4Dist debate, on this view, is a debate between two competing explanations of how things persist, as suggested by Lewis's definitions. Indeed, a crucial factor in assessing these explanations concerns whether 3Dism and 4Dism can be paired with satisfactory underlying ontologies—an issue that constitutes the main bulk of the present chapter. But one must bear in mind that theories of persistence themselves are distinct from the

ontologies that support them.[65]

3.3 Property Persistence

3.3.1 Property persistence under 3Dism and 4Dism

Having explained my preferred conceptions of 3Dism and 4Dism, let me return to the main goal of the chapter, that is, to argue that the amphibian-based account has several advantages in accounting for persisting facts. To demonstrate that, it would be easier to start by considering how different kinds of D-properties persist through time. But do properties even *persist*? Objects, no doubt, persist. Or at any rate they *seem* to persist—our pre-theoretic conception of objects takes them to be capable of existing at more than one time, undergoing changes in their intrinsic properties notwithstanding. But is it not simply nonsense, or a category-mistake, to say that properties also persist? It depends. If we accept a concept of properties which takes them to be Platonic universals, then it is indeed harder to see how we can make sense of properties persisting through time, for properties under such a view are traditionally taken to exist outside space-time. We can, at most, arrive at a derivative view which says that properties persist by participating in events or states of affairs that are the real persisters.[66] However, if we adopt accounts that take properties to exist *in* the objects that possess them, and thus have spatiotemporal locations, such as various

[65] A consequence of taking the 3Dist-4Dist debate to be to a debate between two competing explanatory conceptions rather than as a debate about whether a single theory such as 4Dism is true is that there might be views that bear partial similarities to both views and thus can be considered as versions of both 3Dism and 4Dism, or views that bear no resemblance to both views and thus should be regarded as neither a version of 3Dism nor a version of 4Dism. I find nothing objectionable about this result. After all, 3Dism and 4Dism are mere labels enabling us to quickly grasp the core commitments of the particular view proposed. When such labelling ceases to be useful, we should just discard them. What is crucial is rather the plausibility of the particular view itself.

[66] See Costa (2017) for a defence of this view.

versions of the bundle theory discussed in the last chapter, then it makes perfect sense to say that properties themselves also persist.[67]

So let us consider how a property can be said to remain the same entity at different times. Fortunately, the matter is simpler here than in the case of object persistence. For properties do not seem to change their intrinsic properties, which implies that property persistence involves only diachronically qualitatively identical cases.[68] Suppose that the property *F* persists over a period Δt, where Δt is composed of a series of moments, t_1, t_2, …, t_n. 3Dism about properties can be understood as follows:

3Dist PP.

A property *F* persists through a period Δt by being wholly present at each moment in Δt.

In other words, *F* persists by *enduring* through Δt. According to this view, all *phases* of the property *F*, namely, *F* at t_1, *F* at t_2 , …, *F* at t_n, are identical to the property *F* itself.[69]

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[67] See Audi (2024) for a defence of this view under the setting of a trope ontology. Note that it is important to distinguish between object persistence and property persistence since there can be differences in how they persist. (More on this below.)

[68] Or in any case, this is the view I will assume. See Audi (2024) for a view on trope persistence, where tropes are considered to have determinable essences, capable of changing their intrinsic, determinate properties. Evaluating this view would require determining whether it is plausible for properties to possess determinable essences—an issue that extends beyond the scope of this chapter. Allow me to set aside this novel account.

[69] Here I am employing the useful notion of a 'phase' of a persisting entity to formulate different theories of persistence (Armstrong 1980). Roughly, a phase of a persisting entity is the entity at the relevant time in its history. For instance, suppose that an entity *e* persists from t_1 to t_n. Then *e* at t_1, *e* at t_2, …, *e* at t_n are its phases at the relevant times. The notion is supposed to be theoretically neutral: the existence of phases of a persisting entity does not imply the truth of any particular theory of persistence.

This is the most natural reading of property persistence. The property *F* persists by being multiply located at different moments.

Turning to the other approach, 4Dism about properties can be understood as follows:

4Dist PP.

A property *F* persists through a period Δt by having distinct temporal parts or stages at each moment in Δt.

Each phase of *F*, such as *F* at t_1, *F* at t_2 , …, *F* at t_n, is a distinct temporal part or stage of *F* at the relevant moment according to this view. According to the perdurantist or worm-theoretic version of this view, *F* is a four-dimensional entity composed of those temporal parts. Exactly which of them are temporal parts of the same property will be determined by the 'unity' or 'gen-identity' relation standing between them. By contrast, according to the stage-theoretic version, the property *F*, which exists at and only at a moment, is identical with and only with the stage at that moment, and has the other stages as its temporal counterparts, where the counterpart relation is the gen-identity relation in perdurantism.[70] Although my discussions below concerning 4Dism apply to both the worm-theoretic and

[70] Note that 3Dist PP and 4Dist PP are defined in terms that are compatible with accounts allowing a property to change its determinate property. Following Audi (2024), assume that a property *F* is individuated by its determinable essence and has different determinate properties at different times. Nothing in this prevents one from adopting 3Dist PP and take *F* to persist by being wholly present at different times. Similarly, one can also adopt 4Dist PP and take *F* to persist by having temporal parts or stages that are suitably related to it. The neutral depiction of the unity relation here is crucial: if, as I am assuming in the main text, a property is individuated by its determinate essence, then the unity relation might be construed as something like perfect similarity plus spatiotemporal continuity. On the contrary, if a property is individuated by its determinable essence, then perfect similarity cannot be part of the nature of the unity relation.

the stage-theoretic versions, for ease of exposition, let me talk as if 4Dism is perdurantism.

3.3.2 D-properties and persistence

Let us now turn to the question of which concepts of property can be combined with which approaches to property persistence. The answer seems to follow directly from their natures: D-universals, being diachronically repeatable yet non-duplicable, can endure but not perdure; D-tropes, being diachronically duplicable yet unrepeatable, can perdure but not endure; D-amphibians, being diachronically repeatable and duplicable, can both endure and perdure; and D-unicums, being diachronically unrepeatable and non-duplicable, can neither endure nor perdure. In other words, 3Dists can take properties to be either D-universals or D-amphibians, whereas 4Dists can take properties to be either D-tropes or D-amphibians.

Note that I take care here not to say that D-universals must endure or that D-tropes must perdure. For it is one thing to say that a property is diachronically repeated, yet another thing that it persists by being a diachronically repeated entity. Similarly, it is one thing to say that a property is diachronically duplicated, yet another thing that it persists by having different temporal parts, taken as diachronic duplicates, at different times. This is most obvious in the case of amphibians, where a property is both repeatable and duplicable, and thus can persist by either enduring or perduring (or both). As explained, we should distinguish a theory of persistence from its underlying ontology.

An initial, methodological reason for preferring D-amphibians can be constructed from the very fact that they are compatible with endurantism, perdurantism, and a mixed theory according to which properties endure in some cases yet perdure in others. For it seems better to not rule out endurantism or perdurantism outright, as either of them might turn out to be the correct theory of property persistence. So, given that there is no consensus on the matter, we'd better remain neutral here.

Another related reason for D-amphibians has to do with their unique capability to adopt the mixed theory of property persistence mentioned. It might be argued that since it is possible for there to be cases involving both properties that endure and properties that perdure, or cases involving properties that both endure and perdure, the mixed theory can offer the most plausible account. By contrast, 3Dism about universals and 4Dism about tropes must interpret such *prima facie* possible cases as involving nothing but enduring properties or perduring properties, which seems to be less adequate. Of course, these interpretations are unsatisfactory only if there are convincing cases involving both enduring and perduring properties. And it is, I must admit, unclear that we have such cases. Proponents of 3Dism about universals and 4Dism about tropes can claim that, so long as all the alleged cases can be accounted for in *some* way, there is no need to accept both endurance and perdurance. So, the alleged advantage must be taken as merely methodological or temporary.

3.4 Object Persistence

3.4.1 Object persistence under 3Dism and 4Dism

Let us turn to object persistence, where more concrete cases are available for determining whether amphibianism has any advantage over universalism and tropism. First, some definitions that help anchor the discussion. Much can be said here that parallels what has been said about property persistence. Suppose that an object o persists over a period Δt, where Δt can be divided into a series of instants, t_1, t_2, …, t_n. We can define three-dimensionalism for objects as follows:

3Dist OP.

An object o persists through a period Δt by being wholly present at each moment in Δt.

In other words, *o* endures through Δt. According to this view, all phases of *o*, namely, *o* at t_1, *o* at t_2 , …, *o* at t_n, are identical to *o* itself. This is the most intuitive reading of object persistence.

Turning to the other approach, we can define four-dimensionalism for objects as follows:

4Dist OP.

An object *o* persists through a period Δt by having distinct temporal parts or stages at each moment in Δt.

Each phase of *o*, such as *o* at t_1, *o* at t_2 , …, *o* at t_n is a numerically distinct temporal part or stage of *o*. According to the perdurantist or worm-theoretic version, *o* is a four-dimensional worm composed of those temporal parts. Exactly which are temporal parts of the same object is a matter to be determined by the unity or gen-identity relation standing between them. By contrast, according to the stage-theoretic version, the object *o*, which exists at and only at a moment, is identical with and only with the stage at that moment, and has the other stages as its temporal counterparts, where the counterpart relation is the gen-identity relation in perdurantism.

3.4.2 Bundles and persistence

Let us now turn to the question of which account of objects can be combined with which approaches to object persistence. Again, let us begin by comparing ABT—the view I favour—with the two simplest universal-based and trope-based accounts, namely naïve UBT and naïve TBT.

Recall that a D-universal can be wholly present, yet cannot have perfect duplicates, at different times; a D-trope can have perfect duplicates, yet cannot be wholly present, at different times; and a D-amphibian can be wholly present and have perfect duplicates at different times. Given this, naïve UBT is committed to the view that an object can be wholly present, yet cannot have perfect duplicates, at different times; naïve TBT to the view that an object can have perfect duplicates, yet cannot be wholly present, at different times; and ABT to the view that an object can be wholly present and have perfect duplicates at different times.

If so, then ABT can be combined with both 3Dism and 4Dism. On the one hand, proponents of ABT who favour 4Dism can postulate a distinct amphibian-bundle at each of t_1, t_2, …, t_n to serve as *o*'s temporal part at that time. On the other hand, those who favour 3Dism can identify *o* with an enduring amphibian-bundle that is multiply located at each of t_1, t_2, …, t_n. The flexibility for amphibianists to adopt both 3Dism and 4Dism remains in the case of object persistence.

Naïve TBT can be combined with 4Dism but not 3Dism. The reason is that, although there is a trope-bundle existing at each of t_1, t_2, …, t_n that can serve as the temporal part of *o* at that time, no trope-bundle can serve as an enduring object located at more than one time. Naïve UBT, by contrast, can be combined with 3Dism but not 4Dism. The reason is that, although *o* can be identified with a universal-bundle located at each of t_1, t_2, …, t_n, there cannot be a distinct universal-bundle existing at each of t_1, t_2, …, t_n.[71] As I shall explain, the flexibility of D-amphibians supports an argument in favour of ABT when it comes to accounting for object persistence.

[71] Unless, of course, one makes the rather implausible assumption that, necessarily, every object keeps changing some of its intrinsic properties at every instant. In that case, proponents of naïve UBT can take *o* to persist by having a distinct universal-bundle as its temporal part at each moment throughout its history.

3.4.3 Unchanging objects

Consider cases where no qualitative change is involved—cases where the relevant objects do not change their intrinsic properties throughout their existence. Such cases, I claim, offer a reason to prefer ABT over naïve UBT and naïve TBT. Consider the following pair of changeless worlds:

The Atomistic World.

A world where there is nothing but certain fundamental particles, each of which undergoes no intrinsic change throughout its existence.

The Replacing World.

A world that is qualitatively identical to the Atomistic World, except that no object in it exists for more than an instant.

Let us stipulate that at least some particles in the Atomistic World exist at each instant within a period of non-zero duration. Given this, for every such particle in the Atomistic World, there corresponds a collection of momentary particles in the Replacing World, where each of the momentary particles is replaced by a duplicate particle at the next instant.

These two cases are undoubtedly radical, but they are by no means incoherent. In fact, as will become clearer below, all I need for my argument is a world involving *some* changeless atoms and a world involving *some* objects constantly being replaced by their duplicates (or a mixed world involving both). If we can conceive of a world with some unchanging atoms, then it is a simple step to acknowledge a world with only unchanging atoms. Similarly, if

we can conceive of a world with some objects being constantly replaced by their duplicates, nothing seems to prevent us from acknowledging a world where such replacement is ubiquitous. Therefore, to reduce unnecessary complexity, let me focus on these two worlds.

The Atomistic World and the Replacing World are well-motivated. On the one hand, the actual world might turn out to be—or at any rate could have been—such that apparent changes in intrinsic properties of macroscopic objects supervene upon, or are ultimately explainable in terms of, external relations holding between unchangeable classical atoms or fundamental particles (Lowe 1987, 153-154). On the other hand, the Replacing World is backed up by a thought experiment, proposed by Shoemaker, which involves two powerful machines, one of which eliminates objects while the other generates duplicate objects:

> Suppose, contrary to fact, that the following remarkable machines are possible. The first is a table canceller; if you have set its controls so as to pick out a certain location, then pushing a button on the machine will cause any table at that location to vanish into thin air. The second is a table producer; if you have set its controls so as to pick out a certain location, then pushing a button on the machine will cause a table to materialize out of thin air at that location, and the properties of that table will depend on the setting of the machine and on nothing else. I shall suppose that we have tried out both of these machines separately on many occasions and that they have always performed as described. We have rid the world of many hideous tables and created many handsome new ones. But now we set the controls of the machines so that the location picked out on both is that of my dining room table, and we push both buttons simultaneously. Assuming that the controls of the table producer are set to produce tables of the shape, size, and color of my present dining room table, it will look as if nothing has happened. There will be a spatiotemporally continuous series of [tables], and it will appear to the casual observer as if the same table has persisted throughout. But knowing the powers of the machines, we know

> that this is not so. If *t* is the time at which the buttons were pushed, then the nature of the [tables] that occurred after *t* is due to the pushing of the button on the table producer at t, and not at all due to the properties of the table that was there before; given that the button was pushed, we would have had such a table there after *t* even if there had been no table, or a very different table, there before. It seems plain that in this case one table has been replaced by another. (Shoemaker 1979, 326)

Suppose that we have a pair of machines, operating like those described above, which eliminate and create atoms at the same place and time. If we press the buttons of these machines simultaneously and continuously over a period, then a world containing duplicate, momentary atoms is generated. The Replacing World, then, can be seen as the result of the operation of such machines.[72]

Another argument for both the Atomistic World and the Replacing World appeals to a relatively uncontroversial scenario involving nothing more than the qualitative distribution of objects over a period. Such a scenario is compatible with both worlds, yet it does not

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[72] A similar argument can be built on another thought experiment, which involves two powerful deities, one of which annihilates and the other creates indiscernible objects (Shoemaker 1979, 326-327; Armstrong 1980, 76). Note that Shoemaker and Armstrong propose these thought experiments to demonstrate the inadequacy of the analysis of the unity relation holding between different temporal parts or stages in terms of mere spatiotemporal continuity—an account whose plausibility does not affect my arguments below. Here I am simply using the intuitive viability of such cases to back up the possibility of the Replacing World.

Now, Ehring has in fact proposed a similar thought experiment involving machines that eliminate and generate electrical charges of objects—that is, properties of objects—rather than the objects (electrons) themselves (1997a, 94; 2001, 164-165; 2011, 50-51). He uses such a case to argue for what he calls 'enduring tropes', which are, according to me, D-amphibians. (More on this below.) If successful, this would have provided a more direct argument in favour of amphibianism. However, I doubt we have any intuition concerning the viability of such property-generating/eliminating machines. Indeed, if there is any intuition at all, it seems to be derived from our intuition about objects that possess these properties. Therefore, it seems better to construct our thought experiments in terms of objects rather than their properties.

determine whether an object at one time is identical to an object at a distinct time. Given this, we can generate two equally plausible worlds from the scenario: the Atomistic World, in which qualitatively static 'trajectories' are occupied by the same unchanging objects, and the Replacing World, in which they are occupied by replacing momentary objects. Both worlds thus appear to be legitimate interpretations of the scenario.

If the Atomistic World and the Replacing World are both possible, then ABT seems to enjoy an advantage here. The reason is that neither naïve UBT nor naïve TBT can distinguish between, or accommodate, these two worlds. Let us suppose, without loss of generality, that the Atomistic World contains a single electron, *e*, which exists for a period, Δt, whereas the corresponding Replacing World contains a series of duplicate momentary electrons, e_1, e_2, …, e_n, occupying *the same* locations as *e*. Proponents of naïve UBT must either reject the possibility of the Replacing World, or regard the Atomistic World and the Replacing World as the same world, that is, a world containing an enduring universal-bundle. But the Replacing World is not only possible but cannot be identical to the Atomistic World: the former, but not the latter, contains more than one electron. More importantly, nothing seems to *endure* in the Replacing World. Therefore, as far as the Atomistic World and the Replacing World are concerned, naïve UBT cannot provide a satisfactory account of object persistence.

Proponents of naïve TBT are no better off: they must either reject the possibility of the Atomistic World, or regard the Atomistic World and the Replacing World as the same world, that is, a world containing a perduring object having duplicate trope-bundles as its temporal parts. But the Atomistic World is not only possible but cannot be identified with the Replacing World: the former, but not the latter, contains only one object. In fact, nothing seems to *perdure* in the Atomistic World. Therefore, naïve TBT cannot adequately account for the two worlds.

Proponents of ABT can effectively differentiate between the Atomistic World and the

Replacing World. Thanks to their capacity to be diachronically repeated and duplicated, the Atomistic World can be seen as containing an amphibian-bundle which occupies multiple temporal locations while the Replacing World as containing a collection of momentary duplicate amphibian-bundles, each of which occupies an instant in the relevant period. Thus, the ontological distinction between the Atomistic World and the Replacing World is respected. This constitutes one reason to prefer ABT.

Readers may observe a parallel here between the argument for ABT based on the possibility of the Atomistic World and the Replacing World and the argument for ABT based on the possibility of the one-sphere world and the two-sphere world proposed in the previous chapter. Both arguments hinge on amphibians' unique ability to account for both multiply located and duplicated objects. However, the present case, in fact, provides an even stronger argument for ABT. For proponents of ABT not only can distinguish between the two worlds in terms of what they contain, but can also adopt different accounts of object persistence to explain persisting facts concerning these worlds.

First, proponents of ABT who favour 3Dism can interpret the Atomistic World as containing an enduring object, identified with a multiply located amphibian-bundle, whereas the Replacing World as containing various non-enduring, that is, momentary amphibian-bundles. Second, proponents of ABT who favour 4Dism can interpret the Replacing World as containing a perduring object which has duplicate amphibian-bundles as its temporal parts, whereas the Atomistic World as containing a non-perduring yet multiply located amphibian-bundle. Finally, if they take both endurance and perdurance to be legitimate ways of persisting, then they can also adopt a dualist account according to which the Atomistic World contains an enduring object while the Replacing World contains a perduring object, thereby allowing both worlds to contain persisting objects.[73]

[73] Of course, they can also deny that any object persists in both worlds if they take this to be a more plausible interpretation.

This flexibility in adopting different theories of object persistence, I claim, constitutes another reason to prefer ABT.

Compare this with how proponents of naïve UBT and naïve TBT might account for persistence facts in these worlds. As explained, proponents of naïve UBT, if they wish to accept the possibility of the Replacing World (as they should), are forced to interpret such a world as containing a single enduring universal-bundle, so as to make it compatible with 3Dism. Yet not only are there multiple objects, but there is simply nothing that endures in the Replacing World. Similarly, proponents of naïve TBT, if they wish to accept the possibility of the Atomistic World, are forced to interpret that world as containing a perduring object having multiple trope-bundles as temporal parts, so as to align it with 4Dism. But again, not only is there only one object, but there is simply nothing that perdures in the Atomistic World. Accordingly, both naïve UBT and naïve TBT cannot provide a satisfactory account of persistence here. The moral, it seems, is that we should not distort the ontological facts about these worlds merely in order to make them conform with our preferred conceptions of object persistence.

In sum, ABT is not only capable of properly distinguishing between the Atomistic World and the Replacing World, but it can also be combined with various accounts of persistence to accommodate different intuitions about persistence facts in these two worlds. This makes ABT preferable to naïve UBT and naïve TBT.

3.4.3.1 Heavyweight bundle theories to the rescue?

I have just presented an argument for ABT concerning object persistence. The main competitors I have in mind are one-categorial views such as naïve UBT and naïve TBT which identify an object with a property-bundle. However, faced with the objections above, proponents of such theories might attempt to solve the problems by adopting more sophisticated versions of the bundle theory. Let us consider whether such manoeuvres are

successful.

The best option here seems to be to adopt certain versions of the heavyweight bundle theory which endows the bundling relation with metaphysical roles other than that of binding properties together so that the resulting view is compatible with different theories of persistence. In the last chapter, I have introduced a type of heavyweight bundle theories according to which the bundling relation plays not only the role of a *bundler* but also the role of a *category-transformer*, such that the resulting bundles turn out to fall under different ontological categories than the bundled properties (Section 2.5). Here a different type of heavyweight bundle theories seems to be what is needed, where the bundling relation plays not only the role of a bundler but also the role of an *individuator*, that is, an entity that determines the identity of the relevant bundles. Proponents of both universal-based and trope-based bundle theories may adopt this view to try to reply to the objections they face.

For instance, proponents of the universal-based bundle theory might complain that I am too quick to dismiss their view as incapable of explaining the Replacing World, for they can, in fact, accept a version of the perdurantist theory to account for that world. According to this view, an object is a four-dimensional entity having different universal-bundles at different times as its temporal parts.[74] The problem for naïve UBT, as explained, arises from the fact that there cannot be more than one universal-bundle when no qualitative change is involved: a changeless object must be identified with the same universal-bundle throughout its existence. The suggestion, then, is to postulate momentary bundling relations to serve as individuators: identify each temporal part of a changeless object with a distinct property-bundle constituted by the relevant qualitative universals and a momentary bundling relation existing at and only at that time. An object *o*, then, persists through Δt by having distinct

[74] See, for instance, O'Leary-Hawthorne and Cover (1998), where such a view is recruited to solve the problem of change.

temporal parts o-at-t_1, o-at-t_2, …, o-at-t_n, where the latter are property-bundles individuated by their momentary bundling relations B_1, B_2, …, B_n. The Replacing World can then be taken as containing a four-dimensional entity which has multiple duplicate electron-like property-bundles as its temporal parts.[75]

We thereby get a very interesting view according to which objects persist by perduring, while their constituent qualitative properties persist by enduring. This is certainly a coherent view. But is it well-motivated? Not so clear. First, since such individuating bundling relations are diachronically duplicable, they are either D-tropes or D-amphibians. But then the alleged proponents of the universal-based bundle theory are recruiting what they presumably would try to avoid, namely tropes and amphibians, to account for the Replacing World. It is doubtful that they would go this far only to solve the problem.

Second, such a view fails to account for the Atomistic World in a satisfactory manner. On the one hand, if the individuating bundling relations are taken as D-tropes, then the resulting view loses one of the most attractive points of the universal-based bundle theory. Naïve UBT, as explained, can account for the Atomistic World in an intuitive way, namely by taking it to contain a single enduring object. However, proponents of the current view must take the Atomistic World world as instead containing a perduring object which has different temporal parts at different times. But this is distorting ontological facts about the

[75] This strategy is proposed by Ehring (2001), who—very interestingly—is trying to deal with a similar problem for the 4Dist bundle-theoretic account which takes the bundled properties to be enduring tropes/D-amphibians. However, I do not think ABT (or the enduring-trope view) faces the problem Ehring envisages. For although amphibian-bundles are diachronically repeatable like universal-bundles, proponents of ABT *need not* regard temporal parts of a changeless object as being identical to a diachronically repeated property-bundle. Unlike the universal-based bundle theory, which is incompatible with duplicate temporal parts of a changeless object without the help of something like the momentary bundling relations explained, proponents of ABT can simply take such cases to involve duplicate amphibian-bundles existing at different times.

world: there is simply no more than one electron-like entity in it.[76]

On the other hand, if the individuating bundling relations are taken to be D-amphibians, then, although the Atomistic World can in principle be construed as containing a single enduring property-bundle,[77] the resulting view is considerably less parsimonious than ABT. Indeed, if such bundling relations are introduced solely to make universal-bundles duplicable, why not instead take the bundled properties themselves to be amphibians? This would eliminate the need to postulate individuating bundling relations in the first place, while preserving a one-category ontology. I therefore take the heavyweight universal-based bundle theory to be unmotivated.

Proponents of the trope-based bundle theory may also adopt a heavyweight account in order to render trope-bundles compatible with 3Dism. Recall that the problem for naïve TBT is that, since trope-bundles are diachronically unrepeatable, it cannot accommodate the Atomistic World, which contains a temporally multiply located electron. In response, trope theorists may postulate diachronically repeatable bundling relations to serve as individuators of trope-bundles. On this view, an object o persists by being wholly present at each instant in Δt, which is in turn explained by its individuating bundling relation, B, being wholly present at each instant in Δt. The Atomistic World is then taken to contain a series of duplicate trope-bundles that have the same individuating bundling relation as a common constituent.

This account accepts both object endurantism and property perdurantism, which again is coherent but unmotivated. Given that the bundling relation B is diachronically repeatable, it must be either a D-universal or a D-amphibian. In either case, trope theorists are likely to

[76] A further problem of this account is that it may risk collapsing into a version of the rival substratum theory which takes substrata to be individuators of objects (Benovsky 2008).

[77] Assuming, for the sake of argument, the controversial view that 4Dists need not accept *instantaneous* temporal parts, thereby allowing individuating bundling relations to be diachronically repeatable.

find the postulation of individuating bundling relations unpalatable. Moreover, the view cannot satisfactorily account for the Replacing World. On the one hand, if *B* is taken to be a D-universal, the view can account for the world only by positing an enduring electron, which seems to distort the ontological facts: there is simply no entity that is wholly present for more than a moment in that world. On the other hand, if *B* is taken to be a D-amphibian, then, although the Replacing World can be seen as containing duplicate electron-like entities, the resulting view is less parsimonious than ABT. Indeed, if *B* is introduced solely to make trope-bundles diachronically repeatable, why not adopt ABT in the first place and dispense with the individuating bundling relation? I conclude that the trope-based heavyweight account is likewise unmotivated.

3.4.4 Changing objects

3.4.4.1 The problem of change

Objects undergo change. An object *o* that has an intrinsic property *F* at time *t* might turn out to have a different, incompatible property *F** at a later time *t**. The problem of change, then, inquires how it is possible, given the indiscernibility of identicals, that *o* can have both *F* and *F**. Construed as a conceptual problem, however, there is no real problem: there is nothing in our conceptions that forbids us to assert that *o* has both *F* and *F**, so long as we do not interpret '*o* has both *F* and *F**' as the problematic '*o* has both *F* and *F** at *t*' or '*o* has both *F* and *F** at *t**', but rather as the ordinary '*o* has *F* at *t* and *o* has *F** at *t**' (Hofweber 2009). So, the problem of change is not a conceptual one. A better construal of the problem is to regard it as a metaphysical problem of giving a unified metaphysical explanation of how it is possible that *o* is *F* at *t* and *o* is *F** at *t** both hold (Raven 2011). Here, problems might begin to emerge for some views. Let us briefly survey the dominant solutions to this problem.

An initially useful demarcation among different general approaches to solving the

problem of change, proposed by Lowe (1988, 72-75; 2002, 43-49), is the following.[78] Suppose we are asked to give a metaphysical explanation of the fact that *o* is *F* at *t*, three possible approaches seem to emerge naturally:

(i) the fact that *o* is *F* at *t* is explained by the fact that *o*-at-*t* is *F*;

(ii) the fact that *o* is *F* at *t* is explained by the fact that *o* is *F*-at-*t*;

(iii) the fact that *o* is *F* at *t* is explained by the fact that *o* is-at-*t F*.

The first solution says that the fact that *o* is *F* at *t* is explained by the fact that *o*-at-*t* is *F*, which involves the time-indexed object *o*-at-*t*, the property *F*, and the instantiation relation *is* holding between *o*-at-*t* and *F*. The version of 4Dism advocated by Lewis (1986b) is representative of such a solution. According to this view, *o*-at-*t* is the temporal part of *o* existing at *t*, where *o* itself is taken to be a four-dimensional entity composed of its temporal parts. The problem of change is solved since what strictly instantiates incompatible properties, *F* and *F**, are distinct temporal parts, *o*-at-*t* and *o*-at-*t**, respectively. The object *o* is said to be both *F* and *F** only in a derivative sense, by having distinct temporal parts, *o*-at-*t* and *o*-at-*t**, that are the direct bearers of such properties.

The second solution says that the fact that *o* is *F* at *t* is explained by the fact that *o* is *F*-at-*t*, which involves the object *o*, the time-indexed property *F*-at-*t*, and the instantiation relation *is* holding between *o* and *F*-at-*t*. There are two versions of this solution. On the

[78] Strictly speaking, this is not precisely Lowe's view, as the solutions he proposed were aimed at solving what he calls the 'semantic' problem of change—namely, how to parse a statement like '*a* is *F* at *t*' in a way that avoids inconsistency (1988, 72-75). However, as explained, there is no genuine problem of change in a conceptual sense. It may be more accurate, then, to regard the solutions to be listed as being inspired by Lowe.

one hand, one might follow van Inwagen (1990) in taking the time-indexed property *F*-at-*t* as a fundamental property. On the other hand, one might take the fact that *o* possesses *F*-at-*t* to be further explained by the fact that *o* stands in a dyadic relation, *F*-at, to *t*.[79] Despite the differences between these two versions, the time-indexed property solution generally has it that the problem of change is solved since the two seemingly incompatible properties that *o* possesses, *F* and *F**, turn out to be two compatible properties, namely *F*-at-*t* and *F**-at-*t**.[80] Proponents of such a view typically take this to be a 3Dist approach according to which *o* persists by being wholly present at both *t* and *t**.

The third solution says that the fact that *o* is *F* at *t* obtains in virtue of the fact that *o* is-at-*t F*, which involves the object *o*, the property *F*, and the time-indexed instantiation relation *is*-at-*t* holding between o and *F*. According to this view, the *possession* or *instantiation* of a property by an object is a fundamentally temporal affair. Johnston (1987) seems to be the first who advocated this view—let us follow the literature and call it 'adverbialism'. The problem of change is solved since the properties *F* and *F** are instantiated by *o* in different ways, namely the *t*-way and the *t**-way respectively. Since the object *o* can be seen as persisting by being wholly present at both *t* and *t**, this approach can also be regarded as a 3Dist solution.

As it turns out, there is a fourth solution not recognised by Lowe but needs to be considered to complete the list of possible solutions:

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[79] This is what Rodriguez-Pereyra (2003, 186) calls the 'relational property' view, which posits the same kind of ultimate explanans as the canonical relational theory advocated by Mellor (1981). Note that Mellor does not posit time-indexed properties such as *F-at-t* to account for change, but instead appeals directly to relations such as *F-at* holding between *o* and *t*. For ease of exposition, I shall set aside this subtle difference in what follows.

[80] Only *synchronic* properties such as *F*-at-*t* and *F**-at-*t* are incompatible.

(iv) The fact that *o* is *F* at *t* is explained by the fact that *o*-is-*F* exists/occurs at *t*.

This is what can be called the 'states of affairs' solution (Haslanger 1989, 2003; Mellor 1998). According to this view, the fact that *o* is *F* at *t* is explained by the fact that the state of affairs *o*-is-*F* occurs or obtains at *t*, which involves the state of affairs *o*-is-*F* (which in turn involves the object *o*, the property *F*, and the instantiation relation *is* holding between them), the time *t*, and the *occurring-at* or *obtaining-at* relation holding between them. The problem of change is solved since we have distinct states of affairs, *o*-is-*F* and *o*-is-*F**, that occur at distinct times, *t* and *t**, respectively. Since the object *o* can be seen as persisting by being wholly present at both *t* and *t**, this approach can also be regarded as a 3Dist solution.[81]

3.4.4.2 Lewis's argument in favour of 4Dism

I have now explained the main metaphysical accounts of change.[82] Note that these are schematic accounts compatible with different underlying ontologies: each solution appears capable of being developed as either a universal-based, trope-based, or amphibian-based

[81] One might wonder if it is possible to propose a fifth solution, which takes *o* is *F* at *t* itself to be a fundamental fact. It is unclear to me, however, if this can plausibly be seen as constituting a novel solution. Specifically, I fail to see how this differs from the third solution: the claim that *o* is *F* at *t* is a fundamental fact seems very close to the claim that *o* possesses *F* in a fundamental *t*-way. The difference may be merely notational.

[82] In fact, there is another general approach to solving the problem of change, namely the presentist approach. The solutions discussed so far have all assumed *eternalism*—the view that past, present, and future all exist. Proponents of the presentist approach, however, challenge this assumption and argue, roughly, that since only the present exists, objects that are said to have properties at other times do not strictly possess them in any ontologically robust way, thereby avoiding any genuine incompatibility (Merricks 1994, 1995; Hinchliff 1996). Allow me to set aside this solution for future investigation.

account. The crucial question, then, is whether we have reason to prefer some theoretical packages over others. In the remaining sections of this chapter, I shall examine a particularly important argument in the 3Dist-4Dist debate, namely the argument from temporary intrinsics proposed by Lewis, which attempts to show that we have reason to adopt the 4Dist solution as opposed to the 3Dist solution. In particular, assuming a bundle-theoretic account of objects, I shall investigate whether this argument has genuine force against 3Dism. As it turns out, Lewis's argument fails, as a more promising 3Dist solution—one that takes objects to be bundles of temporally repeatable properties (D-universals or D-amphibians)—is viable. This conclusion provides 3Dists—or metaphysicians in general—with reasons for accepting repeatable properties.

According to Lewis, 3Dists must ultimately accept the view that the supposedly monadic, temporary intrinsic property *F*, possessed by *o* at *t*, turns out to be a dyadic relation, *F-at*, that holds between *o* and *t* (1986b, 204; 1988, 65; 2002, 3-4). However, treating temporary intrinsic properties like *shape* as a dyadic relation is 'simply incredible…. If we know what shape is, we know that it is a property, not a relation' (1986b, 204).[83]

The 3Dists Lewis has in mind are proponents of the second solution, which holds that *o* is *F* at *t* in virtue of *o*'s possessing the time-indexed property *F*-at-*t*.[84] One variant of this

[83] See also Lewis (1988, 65; 2002, 4). Note that Lewis does not object to relations or relational properties *per se*, as his own account also makes persisting objects—which according to him are sums of temporal parts—bearing relations such as *F-at* and *F*-at* to relevant moments. Instead, what Lewis finds unpalatable about the 3Dist solution is that temporary intrinsics are completely left out of the picture: according to him, there should be something that has such properties *simpliciter* (1988, 66; 2002, 4).

[84] Lewis acknowledges that proponents of the third solution can avoid treating intuitively monadic properties as dyadic relations, but he nevertheless finds such a view unsatisfying. According to Lewis, this view amounts to postulating a triadic relation which has *o*, *F*, and *t* as its relata, yet *o*'s standing in such a relation to *F* has nothing to do with its having *F simpliciter*, which is what we should say (1988, 65-66). It is not obvious, however, that the third solution must be interpreted as involving a triadic relation holding between *o*, *F*, and *t*. Moreover, even if Lewis is right on this point, it is not clear why accepting such a temporalized instantiation relation should be any less plausible than

view, as explained, says that *F*-at-*t* is itself a fundamental property (van Inwagen 1990). However, assuming that objects are property-bundles, it is difficult to see how it could be the case that *F*-at-*t* is in any sense fundamental. Why? Consider the question of what ontological difference there is between the time-indexed property *F*-at-*t* and the non-time-indexed property *F*. According to the second solution, *F*-at-*t* must be something ontologically over and above *F*—otherwise it would simply be identical to *F*, rendering the view unable to account for change. But what, if anything, corresponds to the 'at-*t*' component? No satisfactory answer seems available, since on the bundle theory property-possession consists in nothing more than bundles being constituted by their properties. So, *F*-at-*t* cannot be fundamental. A natural move, then, is to hold instead that possessing the property *F*-at-*t* amounts to standing in the *F-at* relation to *t*. This is, of course, just the other variant of the second solution explained. Therefore, at least when the bundle theory is assumed, Lewis's first premise seems to stand.

What about the second premise of Lewis's argument, namely that it is incredible to treat temporary intrinsics as relations to times? Abstracting from specific ontologies, there can be little consensus on whether this claim is true.[85] However, if we assume a bundle-theoretic account, an argument against treating such properties as relations can be mounted. According to the bundle theory, objects are bundles of *properties*. Relations, by contrast, are not the right kind of entity to be bundled in the first place.[86] Given this, if temporary intrinsic properties turn out to be relations to times, they would be excluded from

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accepting a non-temporalized one. In any case, since Lewis's primary targets are proponents of the second solution, in what follows I shall focus on whether that solution is subject to his objection.

[85] Hinchliff (1996, 121-122) and Merricks (1994, 168), for instance, endorse Lewis's view. By contrast, Forbes (1987, 140) and Rodriguez-Pereyra (2003, 187-188) question the truth of the claim.

[86] Or, at least, incorporating relations into the bundle theory would generate serious problems for the view—see O'Leary-Hawthorne and Sider (2002) for difficulties for such a view.

property-bundles, leaving bundles constituted only by their essential and permanent properties (if any)—something bundle theorists are unlikely to accept.[87]

Therefore, Lewis's objection does seem to carry some weight. His conclusion, of course, is that we should accept 4Dism instead. This has significant implications for my purpose, as temporal parts under 4Dism are typically regarded as diachronically unrepeatable entities. This implies that, when a bundle-theoretic account is assumed, we should take them to be bundles of D-tropes or D-unicums. So, if Lewis's argument is successful, it provides a reason to prefer the trope-based or unicum-based account. However, as I shall now argue, bundle theorists who favour a universal-based or amphibian-based account have a way of resisting Lewis's argument, namely by adopting a 3Dist view with roots in the work of Johnston (1987) and Ehring (1997b, 1998, 2011).

3.4.4.3 Johnston's 'over-reaction' reply

To see what the view is, let us first consider the following penetrating observation on Lewis's argument, offered by Johnston:

> This looks like an over-reaction to the problem of intrinsic change, not only because we are without an argument to show that during a period when a thing undergoes

[87] Here is Lewis on this point:

> In itself, considered apart from its relations to other things, it has no shape at all. And likewise for all other seeming temporary intrinsics; all of them must be reinterpreted as relations that something with an absolutely unchanging intrinsic nature bears to different times. (1986b, 204)

Assuming a bundle-theoretic account of objects makes Lewis's point more plausible, since it explains why the object has no shape 'in itself': if shape is a dyadic relation rather than a monadic property, it cannot be among the constituents of the relevant bundle.

> no intrinsic change it and those of its parts which are themselves particular do not endure, but also because we are without an argument to show that when a thing has some of its parts destroyed those of its parts which are particular and remain intrinsically unchanged do not endure. Even if we were to take the problem of intrinsic change seriously, it would push us only as far as a partial endurance view, a view which allows that the intrinsically unchanged particular parts of a thing endure. (Johnston 1987, 117)

Call this the 'over-reaction' reply to Lewis's argument in favour of 4Dism. The idea is that 3Dists need not convert to a full-strength 4Dism so long as a satisfactory account based on *partial endurers* is viable. Now, to present Johnston's view accurately, it's important to note that the changing and unchanging parts considered in his argument are, in fact, mereological parts: he draws on the puzzle of Deon and Theon to illustrate the appeal of the partial endurance view (1987, 121-125). Nonetheless, the moral is the same: adopting the 4Dist solution is 'an extreme over-reaction… to the problem of mereological change' since it implies the untenable result that no part of a persisting thing can survive after a change occurs (1987, 122).

With the clarification made, we can say the same thing with respect to qualitative change. Recall that the second solution, at least when combined with the bundle theory, is subject to the problem of temporary intrinsics. Lewis's suggestion, then, is that 3Dists should convert to 4Dism, which solves the problem by postulating distinct temporal parts, o-at-t and o-at-$t^\star$, that possess F and $F^\star$ respectively. Stated in bundle-theoretic terms, this means that there are two bundles, the o-bundle (which exists at t) and the $o^\star$-bundle (which exists at $t^\star$), that have F and $F^\star$ as constituents respectively. However, just as resorting to 4Dism would be an over-reaction to the problem of mereological change, so too would it be an over-reaction to the problem of temporary intrinsics: by postulating distinct temporal parts, o-at-t and o-at-$t^\star$, any unchanging properties of o that supposedly endures from t to $t^\star$ are

forced to be replaced by numerically distinct yet qualitatively identical properties. A partial endurance view, which allows unchanging properties of *o* to remain its constituents after the change, seems to be a more adequate account. As I shall explain, there are two ways of developing such a view, one corresponding to the second solution and the other to the third solution.

3.4.4.4 The partial endurance view (i)

The partial endurance view states that the unchanging parts and properties of a persisting object *o* endure rather than perdure.[88] Plausible as it is, this alone can hardly be seen as providing a complete story of persistence. Crucially, it says nothing about (i) how changing parts and properties of *o* are to be explained, and (ii) how *o* itself, as opposed to its changing and unchanging parts or properties, persists. Let us consider these issues in turn.

One natural account of changing parts takes it to involve replacement of entities. In the case of mereological change, this means that *o*'s having different parts, *P* and *P**, at different times, *t* and *t**, is explained by the fact that *o* at *t* is composed of *P* (but not *P**) while *o* at *t** is composed of *P** (but not *P*). Similarly, in the case of qualitative change, *o*'s having incompatible properties *F* and *F**, at *t* and *t** respectively, is explained by the fact that *o* at *t* possesses *F* (but not *F**) while *o* at *t** possesses *F** (but not *F*).

Johnston, however, worries that this explanation would collapse the view into a form of

[88] There is, in fact, another component of Johnston's partial endurance view, which states that an object can persist through all but 'substantial changes in its important respects', where the latter are relative to the kind to which the object belongs (1987, 130). Compare this with the nowadays standard view given by Lewis, according to which 'something persists iff, somehow or other, it exists at various times' (1986b, 202). We can see that Johnston's view is in a way more demanding than Lewis's: persistence, according to the former, is constrained by the kind to which the persisting object belongs. It is an important question whether persistence is essentially constrained by the kind to which the persisting object belongs. However, since this issue seems orthogonal to the current debate, allow me to simply set it aside in what follows.

4Dism. Using the example of some plasticine first moulded into a pot and later remoulded into a bust, he offers the following criticism:

> Nonetheless, to the extent that this tenet implies that the plasticine *at one time* constitutes the pot and at *another time* does not, it may seem that the friend of partial endurance must admit that we here have *prima facie* incompatible non-temporally-relative properties of the plasticine. So mustn't the friend of partial endurance […] recognize as distinct entities the plasticine-when-it-constituted-the-pot and the plasticine-when-it-ceased-to-constitute-the-pot and so in effect fall back on the doctrine of temporal parts? (Johnston 1987, 126)

However, even if we admit both the plasticine-when-it-constituted-the-pot and the plasticine-when-it-ceased-to-constitute-the-pot, this by no means forces us to accept 4Dism. 4Dism, as I have argued, requires not only that there are entities suitable for playing the role of temporal parts, but that objects persist in virtue of having different temporal parts at different times. Given this, the plasticine-when-it-constituted-the-pot and the plasticine-when-it-ceased-to-constitute-the-pot need not be taken as temporal parts of a perduring plasticine. In general, even if we accept that there are two distinct entities, P and $P^\star$, that *can* serve as o's temporal parts at t and $t^\star$ respectively, it does not follow that o must persist in virtue of having P and $P^\star$ as its relevant temporal parts. Similarly, even if we accept that there are two incompatible properties, F and $F^\star$, that are had by o at t and $t^\star$ respectively, it does not follow that o must persist in virtue of having two temporal parts, o-at-t and o-at-$t^\star$, that possess F and $F^\star$ respectively. Therefore, proponents of the partial endurance view are not subject to the collapsing objection.

This leads us to the second issue, namely how the object o, as opposed to its mereological or qualitative parts, persists. Indeed, even if the view just outlined need not be combined with 4Dism, one might still wonder if it can be developed into a plausible form of 3Dism. In the following two sections, I shall argue that a genuinely 3Dist account—one that can be

seen as a variant of the second solution—can be built on the view that qualitative change involves replacement of incompatible properties. However, before explaining the details, let us examine an alternative account proposed by Johnston himself.

Having identified the potential difficulty with the replacement view just outlined (a difficulty I do not accept), Johnston proposes a somewhat unexpected yet ingenious solution:

> Temporal qualification has to do with the ways individuals *have* properties. Unproblematically Sam may have the property of being fat in the $t^\star$ way and have the property of being thin the t way. Temporal qualifiers are often adverbs. Sam is presently fat. But he is *then* thin. And we do not get committed to simple contradictions so long as we do not in general allow temporal adverb dropping. (Johnston 1987, 128)

This is, of course, the third solution—adverbialism—explained in Section 3.4.4.1, which asserts that the fact that o is F at t is explained by the fact that o is-at-t F, where the 'is-at-t' indicates that the possessing of F by o is fundamentally temporalized. The problem of change is solved since incompatible properties F and $F^\star$ are possessed by o in different ways, namely in the t-way and the $t^\star$-way, respectively.

What follows, then, is a 3Dist picture according to which (i) unchanging properties of o are explained by taking them to be enduring properties, (ii) changing properties of o are explained by o's having them in different temporalized ways, and (iii) o persists by virtue of being wholly present throughout its career. Instead of a full conversion to 4Dism, friends of the second solution can avoid Lewis's criticism by adopting the less apostate third solution.

However, there is a cost to this view that must be recognised when it is combined with the bundle theory. For nothing in the bundle theory as conceived so far seems able to explain the difference between o's being F—where 'being' refers to the non-temporalized

instantiation relation—and *o*'s being-at-t *F*—where 'being-at-*t*' refers to the temporalized instantiation relation at *t*. The reason is that, according to the bundle theory, instantiating a property *F* simply amounts to being constituted by *F*. Given this, nothing seems available to ground the 'at-*t*' component in *o*'s being-at-*t F*.

The only salvage for bundle theorists, then, seems to be to modify their view and claim that *o*'s being-at-*t F* is in fact explained by *o*'s being constituted-at-*t* by *F*, where being constituted-at-*t* is taken as a primitive ideology of the view. Is this a tenable account? It certainly appears coherent. However, since it departs from what bundle theorists typically claim, it may require independent motivation in order to avoid the charge of involving *ad hoc* modification. For present purposes, I shall simply assume that such motivation can be provided, and leave a full cost-benefit analysis of this version of the partial endurance view for future investigation. What matters is that since a partial endurance view is viable, Lewis's argument does not force 3Dists to convert to 4Dism. In the following two sections, I turn to an alternative way of developing the partial endurance view that can dispense with a temporalized instantiation or constitution relation.[89]

3.4.4.5 The momentary trope view

To achieve this novel account, consider first a closely related yet subtly different theory—the 'momentary trope' view proposed by Ehring (1997b). Momentary tropes, according to him, are properties that are 'individuated by *time*, and, thus, not able to be wholly present at more than one wholly distinct time' (1997b, 255). In other words, they are D-tropes. According to Ehring, positing momentary tropes allows us to adopt a version of the second

[89] A similar problem arises for the fourth solution, which claims that the fact that *o* is *F* at *t* is explained by the fact that *o*-is-*F* occurs at *t*. Bundle theorists cannot adopt this view without modification since they cannot distinguish between *a*-is-*F* and *a*-is-*F*s occurring at *t*: both would seem to involve nothing but the *o*-bundle having *F* as a constituent. One reply, again, is to take being-constituted-at-*t* to be a primitive ideology of the view.

solution without being subject to Lewis's criticism since 'just as a temporal part of an object *o* would be time-indexed without being a relation of object *o* to a time, a momentary trope would be time-indexed without being a relation to a time' (1997b, 255). The idea, as I take it, is that just as temporal parts of *o* can be time-indexed by successively occupying different temporal locations, momentary tropes of *o* can be time-indexed in the same way, by simply being 'stacked up' in the temporal dimension. Therefore, just as 4Dists can say that the *t*-temporal part, *o*-at-*t*, instantiates *F* while the $t^\star$-temporal part, *o*-at-$t^\star$, instantiates $F^\star$, without treating *t* and $t^\star$ as literal relata of *o*-at-*t* and *o*-at-$t^\star$, 3Dists who posit momentary tropes can also say that *o* possesses the *t*-momentary trope, *F*-at-*t*, and the $t^\star$-momentary trope, $F^\star$-at-$t^\star$, without treating *t* and $t^\star$ as literal relata of *F*-at-*t* and $F^\star$-at-$t^\star$. Given this, the account is capable of explaining qualitative change while at the same time avoiding Lewis's criticism that proponents of the second solution must ultimately accept the incredible view that intuitive monadic properties are in fact relations to times (1997b, 256).

So far, so good. A potential worry arises, however, when one adopts the momentary trope solution. For just how 3Dist is the view that emerges here? As explained, the momentary trope solution and the 4Dist solution share the idea that things can be time-indexed without becoming relations to times by serving as temporal stackers. Under both views, there is an entity instantiating temporary intrinsic properties at each time in the history of a persisting object. Given this, one might wonder whether the momentary trope solution ultimately collapses into a version of 4Dism. McDaniel, when discussing the momentary trope view, says that 'Ehring's momentary tropes are in effect temporal parts of properties' (2009, 327). Can a *bona fide* 3Dist solution be maintained under a temporal parts theory of properties?[90]

[90] MacBride (2001) suggests four 'new' ways to solve the problem of temporary intrinsics, one of which is the following: take properties to be composed of temporal parts that are themselves property-like entities, we can then say that *o* avoids instantiating incompatible properties *F* and $F^\star$ by possessing an earlier part of *F* and a later part of $F^\star$. Given plausible interpretations, this theory can be seen as a variant of the momentary trope view: the quality-conferring temporal parts seem to

To make things more concrete, let us model the objection on the bundle theory that we have been investigating so far. The momentary trope solution, when combined with the bundle theory, implies that there is an entity that has *F* at *t*, namely a momentary bundle constituted by momentary tropes of *o* at *t*. This entity seems to be something very much like, if not just, *o*'s temporal part, *o*-at-*t*. However, if for every time-indexed momentary trope, such as *F*-at-*t* and *F**-at-*t**, there exists a trope-bundle playing the role of the temporal part of *o* at the same time, the supposedly novel method of time-indexing by stacking up momentary tropes turns out to be nothing more than the familiar method of time-indexing by stacking up temporal parts. The momentary trope solution thus seems to collapse into a form of 4Dism.

This objection, however, rests upon the dubious principle that when one postulates certain entities that are suitable for playing the theoretical role of temporal parts under 4Dism, they are automatically committed to 4Dism. But, as I have argued, to be a genuine 4Dist, one must accept in addition to the existence of temporal parts that objects persist in virtue of having those temporal parts at different times.[91] Given this, one does not automatically become a 4Dist merely by positing bundles of momentary tropes. Instead, momentary tropes can be used to support a version of the second solution: by positing

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be just momentary tropes which, in turn, compose 'properties'—here understood as mereological sums of tropes (more on this view in Chapter 4). MacBride calls the view the 'temporal parts of property theory' and explicitly says that it is not a variant of the time-indexed property approach (2001, 86). The objector might take this to be further evidence that the supposed novel account is 4Dism in disguise.

[91] Here one might object that, by postulating *temporal parts*, one is already committed to a theory of persistence according to which objects persist by having such temporal parts, for otherwise the entities cannot be appropriately called 'temporal parts' in the first place. I do not deny that the meaning of the term 'temporal parts' might have been associated with 4Dism. But this seems to me to be a mere verbal dispute. Following the terminology here, my point could instead be stated as follows: to be a 4Dist one must accept in addition to the existence of *entities that can play the role of temporal parts* that objects persist by having such entities as temporal parts.

momentary tropes that are stacked up in the temporal dimension, we get time-indexed properties such as *F*-at-*t* and *F**-at-*t**, which in turn allows us to regard the object *o* as being wholly present throughout its history.

That being said, the momentary trope view is still subject to the over-reaction objection. Since objects are regarded as bundles of momentary tropes—that is, diachronically unrepeatable properties—the supposedly unchanging properties of persisting objects cannot endure anymore. Therefore, although the momentary trope view allows bundle theorists to explain qualitative change in a way that can be seen as supporting a version of the second solution, it does so at the cost of sacrificing one of the main motivations for 3Dism. The desired partial endurance view cannot be built out of an ontology of momentary tropes.

3.4.4.6 The partial endurance view (ii)

Fortunately, there is a simple remedy. For we can instead regard properties stacked up in the temporal dimension as *enduring* rather than momentary properties. In other words, by replacing D-tropes with D-universals or D-amphibians, we can maintain a version of the second solution based on partial endurers.

The resulting view is this: an object *o* has a property *F* at time *t* in virtue of the relevant bundle identified with *o* having a time-indexed property, *F*-at-*t*, as a constituent, where *t* is an instant in the period Δt, and *F*-at-*t* is a D-universal/D-amphibian that is wholly present throughout Δt. The 'at-*t*' component in *F*-at-*t* is explained by the latter's being a member of a collection of D-universals/D-amphibians that are stacked up in the temporal dimension. Qualitative change is explained by taking the *o*-bundle to be constituted by time-indexed properties *F*-at-*t* and *F**-at-*t** as constituents.

We therefore get a 3Dist picture according to which (i) unchanging properties of *o* are explained by taking them to be enduring properties, (ii) changing properties of *o* are explained by taking them to be numerically distinct enduring properties, and (iii) *o* persists

by virtue of being wholly present throughout its career. As in the case of the momentary trope view, such an account avoids Lewis's criticism by maintaining that properties like shape are indeed monadic properties rather than relations to times. Moreover, such a view is not subject to the over-reaction objection, since unchanging properties of persisting objects can be regarded as enduring entities.[92] Therefore, the theory seems to offer a more promising account of the second solution.

I shall end this chapter with a discussion of an objection due to Ehring, who at one point attempts to show that the 'stacking-up' solution is not available to those who take properties to be universals:

> Perhaps we can read 'P-at-t' as picking out a *non-relational*, but time-indexed universal. Unfortunately, no such rendering is reasonable if properties are universals. No such interpretation is plausible simply because times cannot be somehow built into universals since times are particulars. Time-indexing of universals such as 'bent' must mean positing a universal relation 'bent-at' with two argument places for particulars, one for objects and the other for times. (Ehring 1997b, 255)

The same objection can, of course, be mounted against the partial endurance view based on amphibians, which are repeatable like universals. At first glance, however, the stacking-up solution *does* seem available to proponents of universals and amphibians: if properties are understood as synchronically repeatable and non-duplicable properties (S-universals) or synchronically repeatable and duplicable properties (S-amphibians), then nothing in this characterisation prevents us from postulating 'momentary universals' or 'momentary amphibians' that are time-indexed by being stacked up in the temporal dimension.

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[92] Also, the view can avoid a primitively temporalized instantiation or constitution relation that Johnston's own version of the partial endurance view seems to force its proponents to accept, thereby making it ideologically simpler.

Accordingly, times can be built into universals and amphibians in the same way they are built into momentary tropes.

Yet it would be uncharitable to interpret Ehring's argument this way, as his writings make it clear that his targets are diachronic, rather than synchronic, properties. This is evident in his definition of momentary tropes as those that are 'individuated by *time*, and, thus, not able to be wholly present at more than one wholly distinct time' (1997b, 255). Likewise, the universal-based view he finds unpalatable is presumably one that regards universals as diachronically repeatable properties, that is, D-universals. Given this, let us instead read the objection as mounted against D-universals and D-amphibians.[93]

The objection to time-indexed repeatable properties, then, says that if a time *t* is built into a property *F*, the resulting time-indexed property *F*-at-*t* will cease to be a universal or an amphibian since *t* is a *particular*. Clearly, whether or not this argument is plausible depends upon what it is to 'build' a time into a property. One natural interpretation here is to treat the time *t* as a literal constituent of *F*-at-*t*—in the same way that a substratum is a constituent of an Armstrongian state of affairs. On this view, the time-indexed property *F*-at-*t* does collapse into a particular which has both *t* and the *P*-at relation as constituents.[94]

However, this is not how proponents of the stacking-up solution understand the time-indexing of properties. Rather, the time *t* is incorporated into the property *F*-at-*t* only in the sense that the latter is a member of a collection of properties that successively occupy distinct temporal locations. Nothing in this mandates that *F*-at-*t* must be regarded as an unrepeatable particular: for although *F*-at-*t* is relativized to *t*, it could also be relativized to

[93] Another reason to focus on D-universals and D-amphibians is that, as I argued at the beginning of this chapter, the distinction between a D-universal and an S-universal is not fundamental. Rather, universals are properties that are repeatable and non-duplicable *simpliciter* (and the same holds for amphibians). If so, then a conception of properties that takes them to be synchronically repeatable but diachronically unrepeatable would be objectionable.

[94] This is the 'victory of particularity' principle championed by Armstrong (1997, 126-7).

other times. In other words, it is in principle possible that the time-indexed property *F*-at-*t* is, in fact, numerically identical to *F*-at-$t^\star$, so long as it is an enduring property that is wholly located at both *t* and $t^\star$. (In that case, it might be better to label the property as '*F*-at-Δt', where both *t* and $t^\star$ are instants in Δt, to avoid confusion.)

Curiously, this conclusion—that one need not take properties to be particulars for them to be time-indexed—has been demonstrated by Ehring himself. Later in his book, he proposes a different version of the stacking-up solution based on what he calls 'enduring tropes'—tropes that could be wholly present at more than one time (2011, 70). Suppose that the seemingly incompatible properties, *F* and $F^\star$, that *o* possesses at *t* and $t^\star$ respectively are, in fact, two time-indexed properties, *F*-at-*t* and $F^\star$-at-$t^\star$, where the latter are enduring tropes existing not only at instants *t* and $t^\star$ but also at each instant in periods Δt and $\Delta t^\star$ respectively. As long as Δt and $\Delta t^\star$ do not overlap, there will be no instant according to which *o* instantiates incompatible properties. Therefore, by positing enduring tropes, Ehring is able to explain why *o* has *F* at *t* and $F^\star$ at $t^\star$ without incurring any incompatibility.[95]

But if the stacking-up solution can be adopted by taking properties to be enduring tropes, then a similar account based on enduring universals or enduring amphibians seems also viable: we can regard *F*-at-*t* and $F^\star$-at-$t^\star$ as universals or amphibians existing not only at *t* and $t^\star$ but also at each instant in Δt and $\Delta t^\star$. (Again, in such a case it might be better to label these properties as '*F*-at-Δt' and '$F^\star$-at-$\Delta t^\star$'.) So long as Δt and $\Delta t^\star$ do not overlap, there will be no instant according to which *o* instantiates incompatible properties. The

[95] The enduring trope view first appeared in Ehring (1998), where he is addressing a distinct yet related problem: the problem of temporary external relations—see also Ehring (2011, 68-75). Ehring ultimately prefers the enduring trope view over the momentary trope view, although for a reason orthogonal to the present issue: he argues that only the enduring trope view allows Humean perdurantist to distinguish between a spinning-sphere world and a stationary-sphere world (2011, 50-68).

stacking-up solution is thus available to both universalists and amphibianists.

Now, what are these 'enduring tropes', ontologically speaking? According to Ehring, they are diachronically repeatable *tropes*. However, as I have argued, only universals and amphibians are diachronically repeatable. Tropes, by contrast, are diachronically unrepeatable. It seems, then, that what Ehring calls an enduring trope view must ultimately collapse into either a universal-based or an amphibian-based account.[96] Therefore, the desired partial endurance view in effect provides bundle theorists who prefer 3Dism a reason to regard properties as universals or amphibians rather than as tropes.

3.5 Conclusions

Let us take stock. I have argued that, in accounting for property persistence, only the amphibian-based view can accommodate both 3Dism and 4Dism. This flexibility provides a methodological reason to prefer amphibianism over its rivals, since it seems preferable not to rule out either 3Dism or 4Dism outright. Relatedly, if there are genuine cases involving both enduring and perduring properties, only the amphibian-based view can account for them.

The amphibian-based view also offers an overall advantage in accounting for object persistence—at least given the bundle theory. On the one hand, in accounting for unchanging objects, the amphibian-based bundle theory has an advantage over universal-based and trope-based bundle-theoretic accounts, since it alone can explain both the Atomistic World and the Replacing World. On the other hand, in accounting for changing

[96] To be fair, Ehring is right to classify such entities as tropes according to his preferred way of distinguishing between particulars and universals. As explained in Chapter 1, he defends a principle of the particular-universal distinction according to which particulars, but not universals, are duplicable. Given this, the idea of a trope being diachronically repeatable is perfectly coherent according to his theory.

objects, only the amphibian-based and universal-based accounts can adopt the attractive partial endurance view, which solves the problem of temporary intrinsics while at the same time avoiding the over-reaction objection. Overall, the amphibian-based account seems to be the most promising property-based account of persistence.

4

Dispositions

4.1 Introduction

In this final chapter, I shall extend the concept of amphibians to dispositional properties. More specifically, modelling on the 'property-first' approach recently proposed by Tugby (2022), I shall outline a parallel account based on amphibians and argue that it is no less plausible than rival views based on universals and tropes when it comes to accounting for a core feature of dispositions. The crux, as we shall see, is to accept a distinction between type-level and token-level amphibians and combine it with the amphibian-based bundle theory.

Tugby (2022) develops his property-first account by taking dispositional properties to be (transcendent) universals as opposed to tropes and has argued in favour of this view through considerations about a characteristic feature of dispositions, namely, that they are by their very nature directed towards their possible manifestations. According to him, this 'dispositional directedness' is to be explained by accepting a two-tier ontological structure, according to which for an object to have a disposition is for it to possess a relevant dispositional universal that stands in a second-order relation to the corresponding manifestative universal.

My defence of the amphibian-based account involves two steps. First, I examine whether Tugby's argument in favour of a universal-based account over a trope-based account is successful. As it turns out, although the two-tier structure can support a plausible theory of dispositional directedness, it is compatible with both the universal theory and the trope theory. Hence, contrary to what Tugby argues, dispositionalists have no special reason to prefer taking properties to be universals. Second, I outline an alternative way to develop the two-tier theory—one that is based on amphibians and preserves a genuine one-category

ontology. As I shall argue, the amphibian-based view enjoys the virtue of qualitative parsimony. I end with a discussion of a potential difficulty for the two-tier account of dispositional directedness.

4.1.1 Dispositional directedness and the Meinongian objection

Truths about dispositions abound: things are soluble, fragile, and so on. Crucially, when we say that something has a disposition, we mean, in part, that it will be manifested in appropriate circumstances. To say that a thing is soluble, for instance, means in part that it will dissolve when placed in an adequate solvent. Likewise, to say that a thing is fragile means in part that it will break when subjected to sufficient external force. Dispositionalism—a metaphysical view that has gained increasing support—holds that such truths about dispositions are to be taken with ontological seriousness: they should be explained by positing dispositional properties possessed by the relevant objects. At the core of dispositionalism, then, is the idea that dispositional properties are, by their very nature, directed toward certain manifestations. Thus, the dispositional property of *being soluble* is directed toward the manifestative property of *dissolving*, and the dispositional property of *being fragile* toward that of *breaking*.

This characteristic feature of dispositional properties of their essentially 'pointing beyond' themselves and 'referring to' something else, namely their manifestations, however, has led some to doubt the plausibility of the dispositionalist metaphysics. One of the most devastating objections, mounted by David Armstrong, is what he calls the 'Meinongian' objection:

> Consider, then, the critical case where the disposition is not manifested. *The object still has within itself, essentially, a reference to the manifestation that did not occur.* It points to a thing that does not exist. (Armstrong 1997, 79)

> But [...] how can a state of affairs of a particular's having a property enfold within itself a relation (of any sort) to a further first-order state of affairs, the manifestation, which very often does not exist? We have here a Meinongian metaphysics, in which actual things are in some way related to non-existent things. (Armstrong 1997, 79)

The Meinongian objection puts pressure on the dispositionalists to provide a metaphysical explanation of dispositional directedness which allows for an object to have a disposition even if it never manifests that disposition. Here we seem to witness a tension within the dispositionalist metaphysics. On the one hand, we want to say that, although a disposition is by its very nature directed towards a further entity—namely, its manifestation—such a manifestation is merely possible and need not actually exist. On the other hand, we also want to say that the essential directedness between a disposition and its manifestation, when taken with ontological seriousness, implies the existence of an underlying relation that cannot exist unless its relata also exist (Tugby 2012, 169; 2013, 457; 2022, 46). An inconsistency about the existence of manifestative properties thus arises.

In what follows, I evaluate a particularly promising solution to the Meinongian objection which postulates a 'two-tier' ontological structure involving type-level properties as well as token-level property-instances. This solution—or something along this line of thought—has already been adopted or entertained by various philosophers, among others Ellis (2001, 133-135) and Mumford (2004, 194-195). However, I will focus on the most worked-out version of this solution, the account put forward by Tugby (2022). To wit, according to him, the two-tier ontological structure involves type-level universals and token-level universal-instances, where the universals are *transcendent* as opposed to *immanent* universals, and the dispositional directedness is accounted for by postulating a second-order relation to which type-level universals stand. This universal-based structure makes it particularly well-suited for accounting for cases involving unmanifested dispositions. However, before spelling out the details, to make it easier to appreciate the somewhat

subtle discussion to come, let me first illustrate the above-mentioned predicament with a figure.

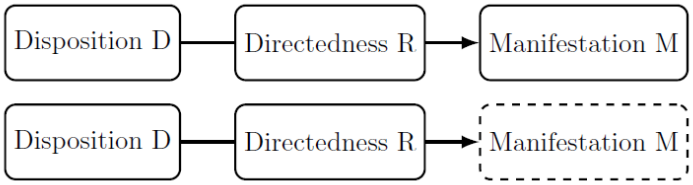


Figure 4. 1 The Meinongian Objection

Figure 4. 1 illustrates what Tugby calls the 'Central Principle' or 'Central Platitude': the fact that an object can have a disposition even if it never manifests that disposition (2012, 169; 2013, 454; 2022, 45). The upper half of the diagram represents the unproblematic case where a disposition, *D*, is related to the relevant manifestation, *M*, by some directedness relation, *R*, where both *D* and *M* exist—that is, the case where *D* is manifested. The alleged inherent inconsistency emerges from the case of unmanifested dispositions represented by the lower half, where *M* fails to exist (as the Central Principle allows), yet *D* is still somehow related to it by *R*. The dashed line represents the embarrassing fact that the relevant entities are both existent and non-existent as required by the view.

4.2 The Universal-Based Two-Tier Solution

According to Tugby, the universal-based view 'provides the best resources for accommodating and explaining the Central Principle about dispositions' while 'the standard versions of trope theory are impoverished in some way when it comes to accounting for this Central Principle' (2022, 46). If true, this would have shown that the Meinongian objection reveals a reason for dispositionalists to prefer a universal-based over a trope-based

account.

Why is the trope-based account impoverished in accounting for the Central Principle? The reason is that the metaphysics of tropes seems to be subject to a version of the Meinongian objection just explained (2012, 172-175; 2013, 456-457; 2022, 46-47). Suppose that an object o_1 has a disposition by possessing the dispositional trope *D* the nature of which consists in an orientation towards a certain manifestative trope *M*. Suppose further that this orientation between *D* and *M* is, as the two-tier solution requires, accounted for by a relation, a dyadic trope *R*, holding between them. Suppose, finally, that the manifestation never comes about, as the Central Principle allows. *M* would then have failed to exist at any time. Yet since *R* exists, its relatum *M* must also exist. An inconsistency therefore arises. The situation can be illustrated by Figure 4. 2 below.



Figure 4. 2 The Meinongian Objection to tropes

The universal-based theory, on the contrary, can avoid this inconsistency (Tugby 2012, 170-172; 2013, 461-462; 2022, 50-52). Suppose that o_1 possesses the dispositional universal *D*, which is related to the manifestative universal *M* by the dyadic universal *R*. Crucially, being *universals*, the property *M* does not depend for its existence upon any *particular* instance of it. This feature makes the universal-based view well-suited for accounting for the Central Principle. The strategy can be developed in either an Aristotelian or a Platonic fashion. Let us explore them in turn.

Suppose we take properties to be immanent universals which must exist in spatiotemporal

objects that possess them.[97] The idea, then, is that so long as there are objects other than o_1 which possess *M* at *some* time (which secure the existence of *M*), o_1 can fail to possess *M* at *any* time without *M* thereby failing to exist. Figure 4. 3 illustrates the solution based on immanent universals.

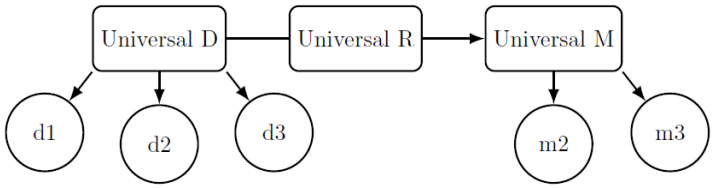


Figure 4. 3 The universal-based two-tier solution (i)

The upper-half of Figure 4. 3 illustrates the type-level fact that the dispositional universal *D* is directed towards the manifestative universal *M* through the dyadic universal *R*. The lower-half, by contrast, involves token-level instances of *D* (d_1, d_2, d_3, …) and *M* (m_2, m_3, …) that guarantee the existence of immanent universals *D* and *M*. By this stage, we can understand an instance of a universal in a neutral way—as something whose existence is compatible with different accounts of objects. The Central Principle can thus be accounted for: the object o_1, which has the property *D* by possessing d_1, can fail to have the property *M* so long as there are other instances of *M*, such as m_2 (possessed by o_2) and m_3 (possessed by o_3), that secure the existence of the property *M*.

Suppose, on the other hand, that we take properties to be transcendent universals—that is, universals which can exist uninstantiated. In this case, the type-level universal *D* can be related to the type-level universal *M* regardless of whether any of their token-level instances

[97] The versions of the two-tier solutions adopted by Ellis (2001, 133-135) and Mumford (2004, 194-195) arguably fall into this category.

exists. Given this, nothing can prevent the object o_1 from having *D* while at the same time not having *M*. Figure 4. 4 below illustrates this solution based on transcendent universals.

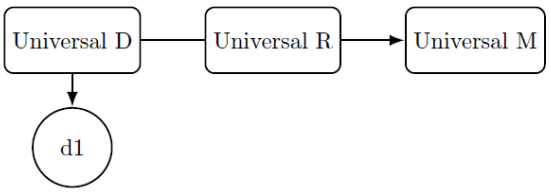


Figure 4. 4 The universal-based two-tier solution (ii)

Again, the Central Principle is accounted for: the object o_1, which has the property *D* by possessing d_1, can fail to have the property *M* even if there are no other instances of *M*.

In sum, by postulating a two-tier ontological structure involving both type-level universals and token-level universal-instances, dispositionalists can account for the Central Principle and thus avoid a Meinongian metaphysics.

4.3 What Is It to Account for Unmanifested Dispositions? (I)

4.3.1 The weak and strong interpretations of the Central Principle

Before proceeding to argue that a trope-based theory of dispositional directedness is also viable, let us pause for a moment to reflect on the issue of what it takes to be a successful account of unmanifested dispositions. As we shall see, assuming a specific view on this issue might constitute an important reason for preferring a Platonic over an Aristotelian approach. Roughly, since the Platonic and Aristotelian versions of the universal-based solution allow for different degrees of dependence between type-level properties and token-level property-instances, they differ in the kinds of unmanifested dispositions they can accommodate. And

if one believes that the Central Principle states a view concerning *dispositions* as opposed to *objects*, which allows for a certain kind of unmanifested dispositions incompatible with the Aristotelian approach, then this might lead one into the conclusion that the Platonic solution has a relative advantage here.

Recall that the Central Principle mandates that a defensible version of dispositionalism must be able to explain how there could be actual dispositions that are never manifested. This requirement, however, seems to admit two possible readings:

Weak UD.

An object can have a disposition without *the same* object manifesting that disposition.

Strong UD.

An object can have a disposition without *any* object manifesting that disposition.

Weak UD states a principle about a particular object, which seeks an ontological base for how it can have a disposition when it never manifests that disposition, *regardless of whether some other objects also manifest that disposition at some time*. Strong UD, by contrast, states a general principle about members of the category of objects, which seeks an account of how an object can have a disposition that it never manifests, *even if no other object ever manifests that disposition at any time.*

The difference is important for proponents of the two-tier account since only the Platonic version seems to be compatible with both Weak UD and Strong UD. The Aristotelian version, by contrast, seems to be compatible with Weak UD but not Strong UD. That both the Aristotelian and Platonic versions can accommodate unmanifested

dispositions under Weak UD is easy to see. For—as illustrated by Figure 4. 3 and Figure 4. 4—both views allow for the possibility of there being an object, o_1, which has a dispositional property, *D*, when it does not have the relevant manifestative property *M*. However, if Strong UD is true, then the Aristotelian solution is refuted since o_1 can have *D* without also having *M* only when there exist some other instances of *M* securing its existence. In general, there can be no instance-free manifestative properties for any dispositional property according to the Aristotelian approach. Such a view, of course, results from the Aristotelian tenet that there are no uninstantiated universals. The Platonic view, on the other hand, has no problem accommodating cases where *M* has no instance since universals can, according to it, exist uninstantiated.

The crucial question, then, is whether we should prefer Weak UD or Strong UD. Although both Weak UD and Strong UD seem to be plausible candidate interpretations of the Central Principle, I am, in fact, inclined to stick with the weaker interpretation: the principle, as I see it, states no more than that an object may fail to manifest the dispositions it has, rather than that some other objects may also fail to manifest the same dispositions. Tugby seems to assume Weak UD as well when he formulates the Central Principle as the claim that 'a particular can have a disposition even if it never manifests that disposition' (2013, 454; 2022, 45). It is also clear from the passages in which he discusses how the universal-based view can account for the Central Principle that he assumes something like Weak UD.[98]

That being said, proponents of Strong UD might object that I—and perhaps Tugby as well—have unfairly assumed that the Central Principle states a modal principle about *objects* having dispositions when it is at least equally plausible to regard it as a modal principle about *dispositions* had by objects. The Central Principle, according to this latter

[98] This fact, as we shall see below, partly explains why he appeals to a distinct principle about dispositions to argue for the priority of the Platonic view.

interpretation, states no more than that an actual disposition could exist, and thus be had by certain objects, without it ever being manifested at any time. Fragility, for instance, is such that it can exist when its corresponding manifestation, breakage, never comes about. On the universal-based two-tier account, this means that, although the dispositional universal *D* necessarily stands in the directedness relation *R* to the manifestative universal *M*, it is nonetheless possible that *D* exists and is possessed by some objects while nothing ever possesses *M*, as Strong UD maintains.[99]

But what this argument has shown is merely that Strong UD constitutes *one* viable interpretation of the Central Principle—a point I do not dispute—and not that it is the only viable interpretation. Crucially, it does not follow that the Aristotelian account is incompatible with the Central Principle: to reach this conclusion, the objector must show not only that the Aristotelian solution is incompatible with Strong UD but also that Weak UD should be replaced by Strong UD. However, the most we can say here seems to be that both Weak UD and Strong UD are viable interpretations of the Central Principle. Since I can see no further reason for preferring Strong UD over Weak UD, it seems that, if the task is to solely account for the Central Principle, then just as Platonists can claim that they have achieved this by accommodating Strong UD, Aristotelians can also claim that they have achieved this by accommodating Weak UD. To put the point differently: since the kind of unmanifested dispositions incompatible with Aristotelianism falls under the Central Principle only according to Strong UD but not Weak UD, and that Strong UD and Weak UD are both plausible interpretations of the Central Principle, proponents of the

[99] A still stronger interpretation says that what is meant by 'a disposition can exist without ever being manifested' is that the dispositional property *D* can exist without the relevant manifestative property *M* also existing. However, this interpretation is in conflict with the dispositionalist tenet that a disposition is necessarily directed towards its manifestation—at least when we take dispositional directedness with ontological seriousness. Given this, I will not pursue this view any further.

Aristotelian account are free to deny those cases by adopting Weak UD.

4.3.2 Tugby's argument against the Aristotelian approach

We have just seen that the Central Principle itself does not provide a reason for proponents of the universal-based account to treat properties as transcendent as opposed to immanent universals. Given that my goal is to argue that a trope-based view can account for the Central Principle and thus solve the Meinongian problem in a similar and equally plausible manner as that of the universal-based accounts, I *can* now move on to explain the promised trope-based view.

However, since Tugby has mounted an important argument in favour of the Platonic view which is, according to him, 'related to the Central Principle' (2022, 56), it might be appropriate to add a brief discussion here to see how and to what extent it affects the conclusion so far. The argument is based on what he calls the 'Intrinsicness Principle' or 'Intrinsicness Platitude': many dispositions are intrinsic to their possessors (2012, 168; 2013, 465; 2022, 56). Tugby characterises the relevant sense of *intrinsicness* as the idea that '*P* is intrinsic to *x* if and only if *x*'s having *P* is independent of the existence of distinct particulars and *x*'s relation to them' (2012, 168; 2013, 465; 2022, 56). Intuitively, an object's having an intrinsic property, such as a vase's being fragile, is a matter about the object itself and not about anything external to it. Given the Intrinsicness Principle, then, there could be an object, o_1, which has a dispositional property, *D*, that retains that property even if the physical environments external to it were to change (2013, 466; 2022, 57). If so, then we can imagine a scenario according to which o_1 has all of its actual dispositional properties including *D*, while nothing ever has the manifestative property *M* (2013, 466-467; 2022, 57-58). The two-tier Aristotelian view, however, cannot account for such a scenario since the universal *M* has no instances and thus does not exist according to the view. Given that *D* is necessarily related to *M*, it is implied that—contra our assumption—o_1 does not have

the property *D* (2013, 467; 2022, 58). The two-tier Platonic view, by contrast, can avoid this conclusion since the universal *M*, taken as a transcendent universal, can exist uninstantiated. Therefore, given the Intrinsicness Principle, the Aristotelian account is refuted as it cannot explain all cases of unmanifested dispositions.[100]

Notice that the problematic scenario the above argument appeals to is just a typical case of Strong UD that is incompatible with the Aristotelian account—one that involves an object which has a disposition without *any* object ever manifesting that disposition.[101] However, instead of taking the scenario to be derived from the Central Principle, we now ground it in a different, seemingly plausible principle—the Intrinsicness Principle.[102] Can proponents of the Aristotelian approach reply to this argument? Below I shall point out two possible way-outs for the Aristotelians.

First, the above argument against Aristotelianism is suspicious of begging the question by implicitly assuming Platonism. As explained, the plausibility of Strong UD can be seen as arising from a modal principle about dispositions according to which a disposition can exist

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[100] To say that the Aristotelian account can reject interpretating the Central Principle as Strong UD is *not* the same as saying that cases of unmanifested dispositions under Strong UD incompatible with the Aristotelian account pose no difficulty for it.

[101] Note that Tugby treats the Intrinsicness Principle as a different principle than the Central Principle. This fact conforms with the observation that he assumes Weak UD rather than Strong UD. However, this also means that he—and anyone who takes the Central Principle to be a principle about objects as opposed to dispositions—should not take the argument as one about accounting for the Central Principle or solving the Meinongian objection.

[102] Apart from Tugby's own argument, we can summarise the relation between the Central Principle and the Intrinsicness Principle as follows. On the one hand, if the Central Principle is taken to be a principle about objects, then the two principles are largely irrelevant: the problematic cases of unmanifested dispositions are based upon the Intrinsicness Principle alone and have nothing to do with the Meinongian objection. If, on the other hand, the Central Principle is taken to be a principle about dispositions, then the Intrinsicness Principle can be seen as *supporting* the Central Principle: the former provides reasons for accepting the above-explained problematic cases under the Central Principle.

without it ever being manifested. Given this, one might claim that the plausibility of the problematic scenario relies not only on the Intrinsicness Principle but also on the modal principle about dispositions. To be sure, such a principle itself is neutral with respect to whether there could be uninstantiated universals. However, if we combine it with the universal-based two-tier account, then what it says becomes a modal principle about dispositional universals according to which a dispositional universal *D* can stand in the directedness relation *R* to the manifestative universal *M* when nothing ever instantiates *M*. But isn't such a view very close to—if not just—committing to the possibility of uninstantiated universals? In light of this, the devoted Aristotelian would not be moved by the argument and should instead simply reject the scenario where o_1 has the dispositional property *D* without any other object having the relevant manifestative property *M*.

Second, one might try to accommodate the problematic scenario under Aristotelianism. The idea is that we can adopt an alternative account of what it takes for a dispositional property to be *necessarily* directed toward its corresponding manifestative property. On this view, the property *D* can be seen as being necessarily directed toward the property *M*, but only in the following sense: in every world where *both D and M exist*, *D* is related to *M* via the directedness relation *R*. Given this, proponents of the Aristotelian view can maintain that there could be a world in which an object o_1 has the dispositional property *D* intrinsically, but since *M* has no instance and therefore does not exist in that world, *D* is not related to *M* via *R* in that world. So, in this sense Aristotelianism can perhaps accommodate the alleged problematic scenario.

In sum, there seem to be ways for Aristotelians to reply to the above objection. In any case, since it is not my aim here to argue that proponents of the Aristotelian view can accommodate cases of unmanifested dispositions falling outside the scope of the Central Principle (from the Aristotelian perspective), I will not assume any of these replies to be successful in what follows. Let us, then, return to our goal of demonstrating how trope theorists can account for the Central Principle and thus reply to the Meinongian objection.

4.4 The Trope-Based Two-Tier Solution

A glimpse at Figure 4. 3 and Figure 4. 4 reveals that the universal-based solutions depend upon there being a two-tier ontological structure which distinguishes between type-level properties and token-level property-instances on both the dispositional and manifestative sides. Two constraints are imposed on this ontological structure to ensure the viability of the solution: (i) the dispositional property *D* stands in the directedness relation *R* to the corresponding manifestative property *M*,[103] and (ii) the dispositional property *D* can exist in the absence of instances of the corresponding manifestative property *M*. If the Central Principle is interpreted as Weak UD, then the latter constraint is achieved by regarding type-level properties as *repeatable* properties: if the property *M* is multiply instantiable, then an instance of *D* can exist without the corresponding instance of *M* also existing so long as there are other *M*-instances. By contrast, if the Central Principle is interpreted as Strong UD, then the constraint is achieved by regarding type-level properties as *transcendent* properties: if the property *M* can exist uninstantiated, then an instance of *D* can exist without there being any instance of *M*.

However, if these are all that is required, then trope theorists have resources within their own metaphysics to construct a similar account as that of universals theorists to explain the Central Principle and thus reply to the Meinongian objection. Recall that the supposedly unfavourable feature which seems to make the trope theory impotent in accounting for the Central Principle, as illustrated by Figure 4. 2, is that tropes are not the sort of entity apt for being instantiated in the first place: since tropes do not have instances, we cannot accept a two-tier ontological structure which involves both type-level tropes and token-level trope-

[103] To ensure that the dispositional property *D necessarily* points to the manifestative property *M*—an assumption in orthodox dispositionalism—we may further assume that *R* holds in all possible worlds where *D* and *M* exist. This can be done by taking, for instance, *R* to be an internal relation holding between *D* and *M* (Tugby 2013, 2022).

instances. Given that the suggested solution depends upon there being a distinction between type-level properties and token-level property-instance, the objection goes, trope theorists are unable to accommodate unmanifested dispositions. Therefore, the trope theory is said to be subject to the Meinongian objection.

However, to fit within the advertised two-tier structure including both type-level properties and token-level property-instances, tropes need not play the role of the type. In fact, for almost any version of the trope view, tropes are typically taken to play the role of the token: tropes are particularised property-instances possessed by objects. An object, then, is said to have the relevant type-level property in virtue of its possession of a token-level trope of that type. The objection to the trope-based two-tier view has mistakenly assumes that a trope must play the role of a type, as universals do under the universal-based two-tier view. Acknowledging this point, then, opens a general route for constructing a trope-based two-tier solution to the Meinongian objection, which takes tropes to be token-level property-instances rather than type-level properties. As I shall explain, this account also comes in two variations: the first, corresponding to the Aristotelian approach, accounts for Weak UD; the second, corresponding to the Platonic approach, accounts for Strong UD. Let us start with the former.

4.4.1 Resemblance classes as ersatz universals

Suppose we take tropes to be token-level property-instances. What, then, should we take type-level properties to be in order to construct the two-tier ontological structure? The most straightforward approach is to adopt what I call the 'Orthodox Trope Nominalism' (OTN) according to which type-level properties are resemblance classes of tropes. Under OTN, a type-level property *F* is identified with the class of all *F*-conferring tropes. We can think of the *F*-class as an 'ersatz universal' corresponding to the *F*-universal in the universal

theory, fulfilling theoretical roles typically associated with that universal.[104]

Building on this thought, we can construct the following trope-based two-tier structure. The first step is to accept in our ontology both token-level property-instances, namely tropes, as well as the corresponding type-level properties, namely resemblance classes of tropes. Applying to our case of a dispositional property *D* directed towards the manifestative property *M*, we can postulate both *D*-conferring tropes and *M*-conferring tropes as well as the two resemblance classes of which these tropes are members. The second step is to accept a directedness relation *R*—a second-order, dyadic trope—to which the class of *D*-conferring tropes and the class of *M*-conferring tropes stand. The crucial case where an object o_1 has *D* but not *M* is then illustrated as follows (see Figure 4. 5), where T_{d1}, T_{d2}, T_{d3} refer to the actual *D*-conferring tropes had by objects o_1, o_2, o_3 and T_{m2}, T_{m3} refer to the actual *M*-conferring tropes had by objects o_2 and o_3 while property *D* and property *M* refer to the class of *D*-conferring tropes and the class of *M*-conferring tropes respectively.

[104] OTN, as I am using the term, includes at least the following three variations of the trope theory. First, the 'Standard Trope Nominalism' advocated by, among others, Williams (1953, 1986) and Campbell (1983, 1990), according to which membership in natural classes of tropes and resemblance between tropes are determined by the nature of tropes. Second, the 'Resemblance Trope Nominalism' according to which the nature of tropes and their membership in natural classes of tropes are determined by resemblance between tropes. Finally, the 'Natural Class Trope Nominalism' advocated by Stout (1921, 1923, 1936) and Ehring (2011), according to which the nature of tropes and resemblance between tropes are determined by their membership in natural classes of tropes. (Ehring (2015, 2024, 2025) takes Stout to be a proponent of Natural Class Trope Nominalism. MacBride (2018, 132-137), however, argues that Stout's view is best understood as not committed to classes of tropes. As I am not an expert on Stout's philosophy and do not aim to adjudicate between different interpretations of Stout's view, I will bypass this issue.) For an extensive investigation of the relative advantages of each of these variations—as well as a defence of the Natural Class Trope Nominalist variant—see Chapters 6-8 of Ehring (2011).

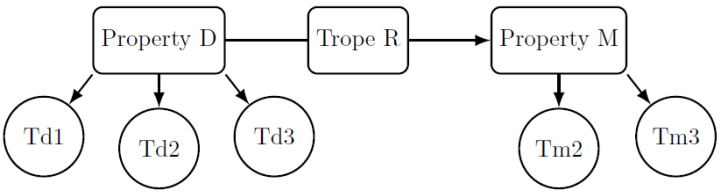


Figure 4. 5 The trope-based two-tier solution (i)

Since the property *M* can exist in the absence of a particular property-instance of *M*,[105] the Central Principle, understood as Weak UD, can be accounted for: the object o_1, which has the property *D* by possessing a *D*-conferring trope, T_{d1}, can fail to have the property M—can fail to possess an *M*-conferring trope—so long as there are other *M*-conferring tropes, such as T_{m2} and T_{m3}, that secure the existence of *M*. Therefore, the trope theorists can reply to the Meinongian objection in a similar way to that of Aristotelians.

[105] Here one might worry that, given that the identity of a class is determined by its members, the property *M*, understood as the class of *M*-conferring tropes, might fail to exist in a world where the *M*-conferring tropes are different than the actual world. In reply, note first that this is a problem for Natural Class Trope Nominalism only: for Standard Trope Theory, so long as there are some tropes with primitively *M*-conferring natures in that world, there will be a corresponding class of *M*-conferring tropes that serves as the property *M*. Likewise, for Resemblance Trope Theory, so long as there are some tropes in that world that are primitively resembling in the *M*-aspect, there will be a corresponding class of *M*-conferring tropes that serves as the property *M*. Natural Class Trope Nominalism, by contrast, seems to face a difficulty here as the nature of an *M*-conferring trope is determined by its membership in the class of actual *M*-conferring tropes, which implies that in a world where the '*M*-conferring' tropes are different, the property *M* does not exist. However, as Ehring (2011) plausibly argues, proponents of the Natural Class Trope Nominalism have several ways out. First, they can adopt a version of modal realism and identify *M* with the class of all possible *M*-conferring tropes. Second, they can adopt a counterpart theory of properties and claim that there is a class of tropes in the targeted world that is more similar to the class of *M*-conferring tropes in the actual world than any other class that can serve as the counterpart of the latter. We can then take (the counterpart of) *M* to be that class in that world. For a detailed defence of this strategy as well as discussions on related issues, see Chapter 7 of Ehring (2011).

4.4.2 Mereological fusions as ersatz universals

An alternative way to construct this first variation is to accept what I call the 'Mereological Trope Nominalism' (MTN) which identifies type-level properties with *fusions* rather than classes of resembling tropes. The dispositional properties *D* and *M*, according to this view, are fusions of *D*-conferring and *M*-conferring tropes respectively. Since the fusion of *M*-conferring tropes can exist without a particular *M*-conferring trope, Weak UD can be accounted for: the object o_1, which has the property *D* by possessing a *D*-conferring trope, T_{d1}, can fail to have the property *M* insofar as there are other *M*-conferring tropes, such as T_{m2} and T_{m3}, that guarantee the existence of *M*.

Although there is—as far as I know—no contemporary defender of MTN, at least when the issue of accounting for the Central Principle is concerned, it seems to be a viable trope-based solution as well. Note that a *prima facie* advantage of taking type-level properties as trope-fusions as opposed to trope-classes is that trope theorists can maintain a more qualitatively parsimonious view which avoids committing to a distinct category of trope-classes—in much the same way that proponents of traditional Mereological Nominalism can maintain a one-category ontology of objects when they replace object-classes under Class Nominalism with object-fusions (Armstrong 1978b, 35). In Section 4.6, I will address the question of whether this move makes the trope-based view as parsimonious as universal-based views.

4.4.3 Tropes with universals

The above trope-based two-tier views will face the same issue as that of Aristotelians if we interpret the Central Principle as Strong UD. Given that a manifestative property *M*, understood as the class or fusion of *M*-conferring tropes, cannot exist when there are no *M*-conferring tropes at all, the view cannot accommodate the case where an object has a

disposition without any object manifesting that disposition.

So, if Strong UD is to be preferred, then trope theorists who favour the two-tier account should construct the solution in a different way to accommodate such cases. My suggestion for trope theorists is as follows. Suppose, again, that we accept both token-level property-instances, such as the trope T_{d1} possessed by the object o_1, as well as type-level properties, such as *D* and *M*. Suppose further that we postulate a directedness relation *R* to which *D* and *M* stand. But instead of regarding *D* and *M* as classes or fusions of *D*-conferring and *M*-conferring tropes, we now regard them as transcendent universals that can exist uninstantiated. The case where a disposition is never manifested can then be illustrated by Figure 4. 6 below.

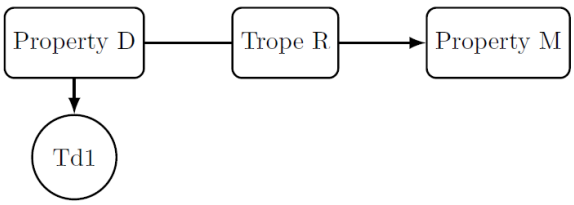


Figure 4. 6 The trope-based two-tier solution (ii)

Since the property *M*, taken as a transcendent universal, does not depend for its existence upon any of its instances tropes, the Central Principle, understood as Strong UD, can be accounted for: the object o_1, which has the property *D* by possessing the trope T_{d1}, can fail to have the property *M* even if the latter has no instance at all. Therefore, trope theorists can also construct the two-tier solution in a way similar to that of Platonists.

A worry that needs to be addressed right away is whether this alternative view is genuinely trope-theoretical. One might worry that, by postulating properties such as *D* and *M*, which are genuine rather than ersatz universals, the view fails to count as a tropist

solution. Surely its proponents cannot claim to be able to account for Strong UD *within* a tropist metaphysics?

One possible reply seems to be the following. Note that in the extant literature, whether a theory counts as a version of the trope theory seems to be determined by whether it is committed to tropes rather than by whether it is committed to non-trope entities. OTN, for instance, count as a trope view even though it is also committed to classes of tropes. The Lockean account favoured by Martin (1980) is another good example: it is widely accepted as a version of the trope theory although it is committed to certain non-qualitative particulars, namely substrata, that are favoured by many universal theorists. The current view, which accepts transcendent universals in addition to tropes, can likewise be seen as a version of the trope-based theory, broadly construed.[106]

Although there seems to be some truth in the thought that a view cannot be excluded as a version of the trope theory simply on the basis of its commitment to non-trope entities, I doubt that the objectors will be convinced. In any case, the issue here may turn out to be a merely terminological one. One could, if one wished, classify the view as a version of Platonism, given its commitment to transcendent universals. Alternatively, one might regard it as a form of pluralism, insofar as it admits of more than one category of properties. The debate over whether the universal-based view fares better than the trope-based view in accounting for Strong UD thus becomes somewhat nonsubstantive. What is substantive, however—what matters for proponents of the trope theory and thus for present purposes—

[106] We can make the same point by considering the parallel question of what makes a theory a genuine universal-based theory. Note that a theory does not fail to be a universal-based account even if it accepts non-universal entities such as substrata. Accordingly, if the above trope-based view fails to qualify as a genuine version of the trope theory, then, by the same reasoning, this universal-based view would no longer qualify as a genuine version of the universal theory. Or better: if the universal-based view is—as most contemporary metaphysicians agree—a legitimate version of the universalist theory, then nothing prevents trope theorists from adopting a two-tier solution that acknowledges both tropes and transcendent universals.

is that there is indeed a way to account for Strong UD by allowing tropes to serve as token-level property-instances. Whether trope theorists should ultimately accept this proposal, of course, is a further question.

4.4.4 Against one-tier ontological structures

The conclusion thus far, then, seems to be that trope theorists can explain the Central Principle by accepting a two-tier ontological structure.[107] However, one might still object that, even if the two-tier solution is available to trope theorists who accept type-level properties alongside token-level property-instances, it remains unavailable to those advocating what can be called the 'Austere Trope Nominalism' (ATN), according to which there is nothing but token-level tropes. ATN cannot account for the Central Principle, whether in the Weak UD or Strong UD formulation, as it is confined to a one-tier structure. In fact, ATN seems to be the real target of Tugby: at one point he says that trope theorists cannot adopt the two-tier solution 'because, unlike the universals theorists, the trope theorists are unable to draw the distinction between property universals and property instances; for the trope theorists there are only distinct property instances' (2012, 172). Later in his book, he also clarifies that the aim of his argument 'is to establish merely that in order to account for dispositions in an adequate way, Platonic universals are needed; even if we accept the existence of tropes, they alone would not deliver a satisfactory account of dispositions' (2022, 45). If so, then my arguments do not refute Tugby's view, as it only

[107] Coates (2022) proposes an alternative way for trope theorists to resist a Meinongian ontology. The main idea is that, since an Actualist trope theorist who accepts the 'powerful qualities' view can account for unmanifested dispositions by taking the directedness relation *R* to relate to the reified *possibility* of *M*, rather than *M* itself, the view is at least as effective as the universal-based theory in accounting for the Central Principle. This solution differs from the one developed here in that the present approach seeks to show that even if *R* is assumed to relate to *M* directly, trope theorists can still account for unmanifested dispositions.

concerns a limitation of a specific version of the trope view.

ATN is no doubt incompatible with the two-tier solution. Yet if Tugby's argument is directed only at ATN and not any other version of the trope theory, its conclusion loses much of its force and interest. As noted, the orthodox account posits resemblance classes of tropes to serve as type-level properties, while the mereological variant regards type-level properties as fusions of resembling tropes. In principle, trope theorists could also admit transcendent universals as type-level properties. By leaving these significant alternatives outside its scope, the argument excludes some of the most serious contenders.

More importantly, we can mount a parallel objection to an austere theory of universals which accepts nothing but type-level universals. As can be easily seen, such a view is also incompatible with the two-tier solution. Yet I anticipate that proponents of the universal-based two-tier solution will not be impressed by this argument, for what they wish to argue is precisely that by accepting both type-level universal and token-level universal-instances they can account for the Central Principle. But then proponents of the trope-based two-tier solution can say the same thing with respect to the above objection, insisting that what they wish to argue is that by accepting both type-level ersatz/transcendent universals and token-level tropes they can account for the Central Principle.

Therefore, the universal-based view seems to be no better suited than the trope-based view to adopt the two-tier solution. If confined to a one-tier ontological structure, both camps are precluded from adopting the two-tier solution from the outset. But when equipped with sufficient ontological resources, both universal theorists and trope theorists can explain the Central Principle. Therefore, the Meinongian objection provides no special reason to prefer the universals theory over the trope theory.

4.5 The Amphibian-Based Two-Tier Solution

We have now reached the first goal of this chapter, namely, to show that the two-tier

ontological structure is compatible with both the universal theory and the trope theory. I now turn to the second goal of the chapter, namely, to defend an amphibian-based account of the two-tier solution. As I shall demonstrate, one merit of this view is that it can maintain a genuine one-category ontology with the fullest explanatory power that competing views based on universals and tropes do not possess.

The crucial step toward this novel version of the two-tier account of dispositional directedness is to distinguish between type-level properties and token-level property-instances under the amphibianist ontology. Interestingly—and importantly for maintaining a genuine one-category ontology—both type-level properties and token-level property-instances can be taken as amphibians. Consider a property *F* possessed by two objects, *a* and *b*. There are, according to the version of the amphibian-based account to be developed, two kinds of *F*-conferring amphibian in such a case: a type-level *F*-conferring amphibian as well as two token-level *F*-conferring amphibians, possessed by *a* and *b* respectively. We can understand the type-level *F*-conferring amphibian as something like the *F*-conferring universal under the universal theory and the token-level *F*-conferring amphibians as something like *F*-conferring tropes under the trope theory.

The reason that proponents of amphibians *can* distinguish between and thus accept both type-level and token-level amphibians associated with the same property is that amphibians are well-suited to play the theoretical roles of both universals and tropes under the relevant views. On the one hand, since an amphibian is repeatable, it can serve as a type-level property which has more than one instance at the same time. On the other hand, since amphibians are duplicable, there can be multiple duplicate amphibians that serve as different token-level instances of the same property. Taken together, proponents of amphibians can postulate a type-level *F*-amphibian which has various other *F*-amphibians as its token-level instances. In other words, we can construct a two-tier ontological structure within a one-category ontology of amphibians.

Suppose, then, that we distinguish a dispositional, type-level property *D*, taken as a type-level amphibian, from its token-level property-instances, taken as token-level amphibians (A_{d1}, A_{d2}, A_{d3}, …) and likewise distinguish a manifestative, type-level property M from its token-level property-instances (A_{m1}, A_{m2}, A_{m3}, …). Suppose further that *D* stands in the second-order dyadic relation *R*—which is also an amphibian—to *M*. The Central Principle can then be explained in ways similar to the universal-based and trope-based accounts.

If, on the one hand, we take amphibians to be like immanent universals in being generically dependent on its instances, then we can explain the Central Principle, understood as Weak UD, as follows (see Figure 4. 7).

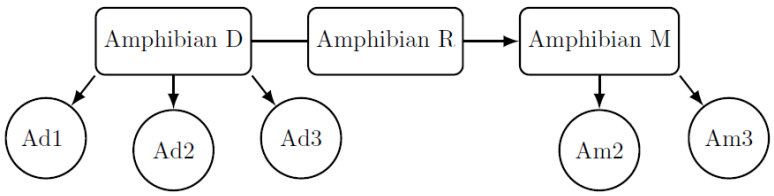


Figure 4. 7 The amphibian-based two-tier solution (i)

The object o_1, which has the property *D* by possessing the amphibian A_{d1}, can fail to possess the property *M* so long as there are *M*-conferring amphibians, such as A_{m2} and A_{m3}, that are possessed by other objects and thus secure the existence of *M*.

If, on the one hand, we take amphibians to be like transcendent universals in being able to exist uninstantiated, then we can explain the Central Principle, understood as Strong UD, as follows (see Figure 4. 8).

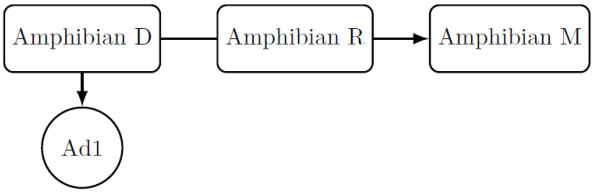


Figure 4. 8 The amphibian-based two-tier solution (ii)

The object o_1, which has *D* by possessing A_{d1}, can fail to have *M* even if there are no other *M*-instances. Therefore, proponents of amphibians can reply to the Meinongian objection by adopting a two-tier structure as universals theorists and trope theorists do.

4.6 Ontological Parsimony

Our evaluation of the two-tier solution cannot end there. For there is another crucial dimension that must be considered in a complete cost-and-benefit analysis of each version of the solution, namely ontological parsimony. If it turns out that one version of the solution is more parsimonious than the others, then even if all accounts are capable of explaining the Central Principle by accepting a two-tier structure, ultimately, we might still prefer the more parsimonious account.

Following Lewis (1973, 87), metaphysicians nowadays distinguish between *qualitative* and *quantitative* parsimony. A theory is qualitatively parsimonious when it posits fewer *categories* of entities, while it is quantitatively parsimonious when it posits fewer *entities* of any category. Lewis, as well as many philosophers, takes qualitative parsimony to be a better philosophical or empirical hypothesis than quantitative parsimony.[108] However, counter arguments supporting quantitative parsimony have also been proposed.[109] I will not attempt

[108] See, for instance, Lewis (1973, 87); Ellis (1990, 55); Bacon (1995, 87).

[109] See, for instance, Nolan (1997); Jansson and Tallant (2017).

to settle the issue here, and shall assume that both forms of parsimony count as theoretical virtues.

Consider first quantitative parsimony. At first sight, it may seem that the universal-based view is the apparent winner here: for every universal accepted by universal theorists, there corresponds a collection of many resembling tropes that trope theorists must accept in order to achieve the same explanatory power (Rodriguez-Pereyra 2002, 205-206). Similarly, for every universal there corresponds a collection of many amphibians—including both type-level and token-level amphibians—that I must accept.

However, matters become less clear once we consider the ontological commitments of another crucial aspect of these accounts, namely the ontological status of objects. As I have argued in Chapters 2 and 3, both universal-based and trope-based bundle theories are unable to accommodate certain intuitive kinds of scenarios that the amphibian-based account can accommodate without difficulty. Given this, if the bundle theory is assumed, then the amphibian-based account enjoys greater explanatory power and should not be dismissed as less quantitatively parsimonious. If, on the other hand, the universal-based and trope-based accounts are instead developed under the substratum theory, then, although they may turn out to have the same explanatory power as that of amphibianism, it is far from clear that the amphibian-based account accepts more entities and is less quantitatively parsimonious, since such views posits a plurality of irreducible particulars.

Relatedly, since the kinds of scenarios that universal-based and trope-based accounts can accommodate differ, the number of scenarios they can accommodate presumably differs as well. In this respect, the universal-based and trope-based accounts do not even enjoy the same explanatory power to begin with. No straightforward comparison in terms of quantitative parsimony is therefore available.[110] In sum, quantitative parsimony does not

[110] Moreover, no meaningful comparison can be made if it turns out that there are, in fact, infinitely many universals or states of affairs (Rodriguez-Pereyra 2002, 206).

clearly favour any view.

Fortunately, a comparison in qualitative parsimony is more trackable. In what follows, I shall focus on qualitative parsimony, asking which theoretical package posits fewer ontological categories. As said, in order to give a proper analysis, we must bring in another aspect of the solution that I have been avoiding going into too many details so far—namely, to consider what an object ontologically amounts to under each version of the two-tier solution. The reason for this is very simple: for the explanans we use to account for the Central Principle involve both objects and properties. And although I have been trying to make as clear as possible how type-level properties and token-level property-instances are to be constructed, it remains unanswered which metaphysical account should be given of objects under each version of the two-tier solution. As we can expect, adopting different accounts of objects will affect the overall ontological cost of each version of the solution. Let us examine each version of the two-tier solution in turn.

4.6.1 Fundamental categories under the universal-based solution

Recall that the two-tier solution requires both type-level properties, such as *D*, and token-level property-instances, such as d_1, d_2, d_3. That the universal-based variant takes *D* to be a (immanent or transcendent) universal and is thus committed to the category of universal is transparent. What admits of different interpretations, and thus affects the qualitative parsimony of the view, is the ontological status of universal-instances. As it turns out, contemporary proponents of universals typically take instances of a universal to be objects that possess the universal.[111] Under this view, the instance d_1 is nothing but the object

[111] See, however, Lowe (2006), who argues that objects can only serve as instances of *substantial kinds* rather than *attributes*—the latter of which being our main concern here, namely characterising universals. According to Lowe, only tropes—or what he calls 'modes'—can serve as instances of characterising universals. Such a view leads us to the trope-plus-universal view to be discussed in Section 4.6.2.1.

o_1 that instantiates *D*. Now, there are two broad approaches to understanding the ontological status of objects: the bundle-theory and the substratum-theory. Let us evaluate these views in turn.

4.6.1.1 Token-level instances as universal-bundles

According to the first approach, which is the main concern of this thesis, objects are nothing but bundles of universals. As explained in Chapter 2, there are various ways to develop this account, the most parsimonious version being naïve UBT, according to which objects are simply identified with universal-bundles. If proponents of the universal-based two-tier solution accept this view, then the solution can be constructed within a one-category ontology, which, if successful, would constitute a significant advantage of it.

However, as I have already argued (see Section 2.2.1), this version of the bundle theory faces a notorious objection, namely the duplication objection. To wit, the problem is that, since a universal cannot be duplicated, a universal-bundle cannot be duplicated either.[112] Yet if there cannot be duplicate universal-bundles, proponents of naïve UBT cannot accommodate intuitive scenarios involving duplicate objects, such as the two-sphere world, according to which there are nothing but two spheres that are at a distance from one another (Black 1952, 156).

Although I take the duplication objection to carry genuine force, I shall not assume that it offers a knock-down argument against naïve UBT. Instead, what matters for present purposes is that, while the bundle theory could gain qualitative parsimony by reducing the category of object to that of universal, it does so at the cost of having less explanatory power. When coupled with the two-tier solution, it restricts the scope of the account in an

[112] Note that Tugby seems to be committed to the non-duplicability of universals: 'if one adopts universals, then one holds that all instances of a given property are instances of the very same entity' (2022, 45).

unsatisfactory way, confining it to cases involving non-duplicate objects. For instance, it is inapplicable to scenarios involving two exactly resembling objects that both possess the same disposition, where one manifests that disposition at a later time while the other remains unmanifested throughout its career. Yet there seems to be no reason why a theory of dispositional directedness should exclude cases like this from the outset.

To regain the alleged explanatory power, proponents of the two-tier solution might turn to sophisticated versions of the universal-based bundle theory. For instance, they might follow Rodriguez-Pereyra (2004) in taking objects to be instances of universal-bundles, or follow Zhang (2018) in taking objects to be bundles of universal-instances (see Section 2.4.1). Granted, by appealing to these more sophisticated versions, proponents of the universal-based solution can reply to the duplication objection that plague naïve UBT and thereby recover the explanatory power it lacks. However, such sophisticated accounts appear to commit bundle theorists to a two-category ontology of universals and instances.[113] Accordingly, it seems that the universal-based two-tier solution, with full explanatory power, can only be developed under a two-category ontology.[114]

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[113] Both Rodriguez-Pereyra's bundle-instances and Zhang's universal-instances are entirely constituted by universals. One might think this renders these entities reducible to the very universals from which they are constituted. Yet this need not follow. An Armstrongian state of affairs *Fa* is entirely constituted by *a* and *F*, but it is nevertheless irreducible to their mere fusion. Bundle-instances and universal-instances arguably exhibit the same feature. Also note that universals are repeatable while bundle-instances and universal-instances are—as I have argued—best seen as unrepeatable. This provides another reason to see them as constituting different ontological categories.

[114] Proponents of Platonic universals face a distinct problem here, since it is not clear that they can adopt the bundle-theoretical account of objects. Transcendent universals are traditionally conceived as existing in a 'Platonic heaven' isolated from space and time. If so, there is nothing to be bundled in the first place, as the constituents of bundles are typically assumed to be spatiotemporal entities. One option for Platonists is to posit irreducible spatiotemporal universal-instances alongside universals themselves. Both substrata and tropes would be natural candidates for such instances. This leads us to the views to be discussed in Sections 4.6.1.2 and 4.6.2.1. A more credible response, hinted by Tugby (2022, 178), is to deny that transcendent universals must exist outside of space and

4.6.1.2 Token-level instances as substrata

For the sake of completeness, let us also consider another option available to proponents of the universal-based account, namely the substratum theory, according to which each object is constituted by a *substratum*—a property-bearer that instantiates universals. On this view, an object may be interpreted either as a *thin* particular or as a *thick* particular: the thin particular is the substratum itself, whereas the thick particular is the complex entity constituted by the substratum together with the monadic universals it instantiates (Armstrong 1989b, 94-96; 1997, 123-126). For instance, o_1 can be seen as either a substratum, s_1, or the complex of s_1 as well as the universals it instantiates. Either way, the view posits a distinct category of substrata in addition to the category of universals. The universal-based two-tier solution, when combined with the substratum theory, is therefore also committed to a two-category ontology.

4.6.2 Fundamental categories under the trope-based solution

The trope-based two-tier solution, as explained, takes token-level property-instances of a type-level property *D* to be *D*-conferring tropes, such as T_{d1}, T_{d2}, T_{d3}. Given this, a commitment to the category of trope is obvious. According to the most popular version of the trope-based account of objects, that is, naïve TBT, the object o_1 having the property *D* can be taken as a trope-bundle which has as constituents T_{d1} as well as other tropes corresponding to the properties of o_1. If so, then incorporating objects into the tropist picture does not commit trope theorists to a distinct category. What makes the trope-based approach subject to different interpretations and thus committing to different fundamental

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time. Since all that is needed for the two-tier solution is that type-level universals can exist uninstantiated, it is possible to take transcendent universals to exist in the spatiotemporal system as well. Given this reading, transcendent universals can be regarded as constituents of bundles.

categories is rather the ontological status of the type-level property *D*.

However, as explained (see Section 2.2.2), naïve TBT is subject to a devastating objection, namely the repetition objection. The problem, in sum, is that since a trope-bundle, like its constituent tropes, cannot be repeated, proponents of naïve TBT cannot accommodate scenarios involving simultaneously multiply located objects, such as the one-sphere world according to which there is nothing but an iron sphere being at a distance from itself. Yet there seems to be no reason that a theory of dispositional directedness should by itself rule out cases involving such repeated objects. Therefore, the relevant trope-based account also fails to have the full explanatory power that a satisfactory version of the two-tier solution should claim to have.

In light of this, proponents of the two-tier solution might try to regain the alleged explanatory power by upholding a sophisticated version of the trope-based bundle theory, according to which an object is identical to a repeatable *bearer* of a trope-bundle rather than the trope-bundle itself (see Section 2.4.2). The price, though, is that such a view commits the trope theorists to an additional category of bearers.

In any case, since such a sophisticated version of the trope-based bundle theory is rarely, if ever, defended, I shall not assume it in what follows and shall instead proceed with the canonical view, namely naïve TBT. Readers should, however, bear in mind that the repetition objection might ultimately force trope theorists to accept yet another fundamental category of being—a view that must be regarded as a cost of the theory. Let us, then, return to the question of how adopting different accounts of type-level properties may affect the overall categories admitted under the trope-based two-tier solution.

4.6.2.1 Type-level properties as resemblance classes or transcendent universals

Consider first one of the accounts corresponding to the Aristotelian solution, namely the trope-based view combined with OTN, according to which *D* is identified with the

resemblance class of *D*-conferring tropes. Since classes plausibly constitute a different ontological category than tropes, the account appears committed to a two-category ontology.[115] The same goes for the account parallel to the Platonic solution, the trope-plus-universal view that regards *D* as a transcendent universal which has *D*-conferring tropes as instances. Since transcendent universals constitute a different category than tropes, the account is also committed to a two-category ontology.[116]

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[115] Why do classes constitute a different ontological category than tropes? The reason is, roughly, that while the class of *D*-conferring tropes is non-duplicable, its member tropes are nonetheless duplicable. Since duplicability is arguably a fundamental feature by which ontological categories can be distinguished, classes and tropes should be regarded as distinct categories.

It might be objected, however, that classes are not, in fact, non-duplicable. Suppose there are ten exactly resembling objects that possess the property *D*. The trope theorist would explain this by positing ten corresponding *D*-conferring tropes, one for each object. Now consider the class containing five of these *D*-conferring tropes and the class containing the remaining five. These two classes appear to be duplicates of one another.

In response, although not all classes are non-duplicable, those that function as ersatz universals certainly are. According to the trope theory, the property *D* is identified with the class of *all D*-conferring tropes. Since there cannot be more than one class that has the same members, the property *D* cannot be duplicated.

(So, which category do classes of *D*-conferring tropes fall under? According to Armstrong, classes of first-order particulars are not repeatable in the sense that they are not 'predicable of many' (1997, 188). Given that tropes are plausibly also first-order particulars, I tend to follow Armstrong in taking classes of *D*-conferring tropes as unrepeatable entities. It follows that classes of *D*-conferring tropes are unicums (if they are taken as properties). In any case, since *D*-conferring tropes are duplicable while their classes are not, that they fall under different categories holds whether or not this view is ultimately correct.)

[116] To see this, consider the fact that, while the transcendent universal *D* is repeatable, its instance *D*-tropes are not. Since duplicability is arguably a fundamental feature by which ontological categories are distinguished, transcendent universals and tropes should be regarded as constituting distinct categories.

4.6.2.2 Type-level properties as mereological fusions

Matters become more interesting when we turn to another version of the trope-based account—one that is combined with MTN—which takes the property *D* to be the fusion of *D*-conferring tropes. As foreshadowed, this account reduces both type-level properties and the objects that possess them (assuming naïve TBT) to token-level property-instances, that is, tropes. If successful, then the account appears to have the advantage of maintaining a one-category ontology, thereby achieving the qualitative parsimony we are after.

The problem is that this view faces what I call the 'single instance' objection: the distinction between type-level properties and token-level property-instances collapses in cases where there is only one instance of a type-level property. For instance, it seems highly plausible that a type-level property, such as the manifestative property *M* at which the dispositional property *D* is directed, could be instantiated only once throughout its career. According to the trope theory, then, such a case is explained by saying that there is a single object o_1 that has an *M*-conferring trope T_{m1}. However, given MTN, the type-level property *M*, taken as the fusion of *M*-conferring tropes, would be identical to the token-level property-instance T_{m1}. But then the two-tier solution cannot get off the ground as it depends upon there being a distinction between *M* and its instances.[117]

Perhaps one could try to explain why denying the possibility of singly instantiated properties is not absurd—though I doubt that this strategy can succeed. What matters, however, is that proponents of this view must acknowledge that this version of the trope-based two-tier solution, although being able to reduce the category of type-level properties to token-level property-instances, suffers from having less explanatory power than versions positing either resemblance classes or transcendent universals as type-level properties. It

[117] The problem will not arise if we take type-level properties as resemblance classes or transcendent universals: the property *M*, taken as either the class of which T_{d1} is the sole member or the transcendent universal of which T_{d1} is the sole instance, would be different from T_{d1}.

seems, then, that the trope-based solution, like the universal-based solution, requires at least two categories to fully explain the Central Principle—that is, to accommodate all intuitively plausible cases of unmanifested dispositions.

4.6.3 Fundamental categories under the amphibian-based solution

We are now on the way to seeing the distinctive merit of the amphibian-based solution, namely that it can maintain a genuine one-category ontology without losing the full explanatory power that the two-tier solution should have.

To evaluate the amphibian-based account in terms of qualitative parsimony, we start again by considering what ontological account should be given of objects. As far as I can see it, we need not postulate a distinct category such as substratum to give a satisfactory account of objects when it comes to accounting for unmanifested dispositions. All that is needed is the bundle-theoretical account according to which an object is identical to a bundle of token-level amphibians—that is, ABT (see Section 2.7). Given this amphibian-based account, the category of objects can be reduced to that of amphibians. Together with the fact that both type-level properties and token-level property-instances are regarded as amphibians, we get a one-categorial yet two-tier account which ultimately accepts nothing but amphibians. This constitutes a great advantage of the view over the universal-based and trope-based accounts discussed above in terms of qualitative parsimony.

To further illustrate the point, compare the amphibian-based account with the less-than-perfect one-categorial versions of the universal-based and trope-based solutions examined above. Consider first the two-tier solution based on naïve UBT. The problem for such a view, as explained, is that it cannot accommodate intuitive cases involving duplicate objects. No similar problem arises for the amphibian-based solution: since amphibians are duplicable, bundles of amphibians are plausibly also duplicable (see Section 2.7). Given this, cases involving duplicate objects can be accounted for by postulating duplicate amphibian-

bundles.

On the other hand, the difficulty faced by the trope-based solution which accepts a mereological reading of type-level properties is that it cannot distinguish between type-level properties and token-level property-instances in cases where the relevant properties are instantiated only once. No similar problem arises for the amphibian-based solution: in the case where (say) the property *M* is instantiated only once, *M* is still distinguished from its single instance since the former is identified with a type-level *M*-amphibian while the latter a token-level *M*-amphibian.

Therefore, both scenarios involving duplicate objects and singly instantiated properties are accommodated within the amphibian-based solution. The account does not need to sacrifice explanatory power in exchange for ontological parsimony.

4.7 What Is It to Account for Unmanifested Dispositions? (II)

If what has been said about the two-tier solution is correct, then although Tugby's theory constitutes an interesting alternative account of dispositional directedness, proponents of immanent universals, tropes, and amphibians can all employ similar strategies to explain the Central Principle. Moreover, with respect to ontological parsimony, the amphibian-based account appears to have a further advantage, namely that it can build the two-tier ontological structure within a one-category ontology without encountering similar difficulties faced by universal-based and trope-based views.

In closing, I shall consider a potential worry. I will present it as an objection which attempts to show that, not only the amphibian-based solution gains no advantage in accounting for the Central Principle, but that the very strategy of positing a two-tier ontological structure is misguided or pointless from the beginning.

Recall that a key premise in Tugby's argument and my response was that, in order to

provide an adequate metaphysical account of dispositional directedness, we must posit entities that correspond to the *disposition-pointing-to-manifestation* structure. The dispositional directedness, if taken with ontological seriousness, suggests the existence of an underlying dyadic relation that cannot exist unless its relata also exist (Tugby 2012, 169; 2013, 457; 2022, 46). This is what led proponents of the two-tier solution to posit type-level dispositional properties, such as *D* and *M*, as well as a second-order directedness relation *R* holding between them. Yet one might object that this requirement sets the bar too high for what counts as an adequate metaphysical account of dispositional directedness. One might object that, to explain the dispositionalist idea that a disposition points to its manifestation, one need not reify the dispositional directedness as a relation holding between the relevant dispositional property and manifestative property. All that is needed, the objector might claim, is the dispositional property itself.

This is, in fact, the view adopted by several metaphysicians (Heil 2003; Molnar 2003; Martin 2008; Whittle 2008). For instance, according to Heil, 'the existence of a disposition does not in any way depend on the disposition's standing in a relation to its actual or possible manifestations' (2003, 80). The truthmaker for the claim that a disposition is directed towards its manifestation, according to him, does not involve a 'connection' residing inside or outside the disposition (2003, 123-4). Rather, the truthmaker is just the disposition itself: it is of the nature of a disposition to yield its manifestation (2003, 124). If so, then the objector might claim that the truthmaker for the claim that *D* stands in *R* to *M* is nothing but *D* itself.

Tugby, as noted, finds this view unsatisfactory. According to him, to give an adequate explanation here, one must explain what it means for a disposition to 'point beyond' itself to a possibly non-existent manifestation (2022, 49). One must, as he puts it, 'cash out' the 'pointing beyond' metaphor in ontological terms (2022, 49). And if it turns out that, on a view like Heil's, the fact that a disposition is directed towards its manifestation can only be taken as primitive, then the view inevitably incorporates an objectionably mysterious

element. In light of this, it seems we have reason to reject *D* itself as providing an adequate truthmaker for the claim that *D* stands in *R* to *M*.

A requirement like this may first appear appealing. Whenever we encounter an entity which we believe is intrinsically 'pointing to' or 'directed towards' some other entity, the most straightforward metaphysical account underlying such a claim is to posit a relation holding between these two entities. However, on reflection, such a requirement may seem too strong as a general metametaphysical principle. Consider a universal—any universal—*F*. As a universal, *F* is intrinsically multiply instantiable: it is by its very nature capable of having more than one instance. It follows that *F* is intrinsically pointing beyond itself to various possibly non-existent *F*-instances. Consider, then, the question of what constitutes the truthmaker for the claim that *F* is directed towards those instances. The only plausible answer, it seems to me, would be *F* itself. For it is of the nature of *F* that it is intrinsically multiply instantiable. To be *F* is—at least in part—to be capable of having more than one *F*-instance. Yet given the above metametaphysical requirement, the existence of *F* does not give us an adequate truthmaker here. According to it, we must take seriously the 'instantial' directedness which holds between *F* and its possible instances, just as we must take seriously the dispositional directedness which holds between a disposition and its possible manifestations. To achieve this, then, we should accept a second-order relation $R^{\star}$ that holds between *F* and the universal *instancehood* of which all of *F*-instances are instances,[118] just as we should accept a second-order relation *R* that holds between *D* and *M*.

It is hard to imagine that any proponent of universals would acknowledge the need for a distinct universal *instancehood* to explain why *F* is multiply instantiable. That *F* is multiply

[118] We cannot take $R^{\star}$ to have held between *F* and each of its instances, for then—given that a relation cannot exist unless its relata also exist—all of its possible instances would turn out to be actual instances, which runs afoul of the fact that *F* can fail to be instantiated by any particular *F*-instance.

instantiable, again, is plausibly made true by nothing more than *F* itself.[119] The alleged metametaphysical requirement, then, seems to fail for this case. It seems unreasonable, then, to claim that whenever we encounter an object which is said to be intrinsically directed towards another thing, we must postulate a relation holding between them. But if we don't need a second-order relation of instantial directedness in the case of the instantiable universal *F*, why take different attitude towards the second-order relation of dispositional directedness in the case of the dispositional property *D*? If *F* alone can serve as the sole truthmaker for the claim that *F* is directed towards it possible instances, then why not also accept that *D* alone can serve as the sole truthmaker for the claim that *D* stands in *R* to *M*? Heil's view may not be that crippling as one might have thought.

How can proponents of the two-tier solution reply to this objection? Perhaps they can follow Tugby (2022) in claiming that the two-tier account is an account of *natural modality* only—that is, it is an account that concerns only 'those possibilities (and necessities) arising from the laws of nature and the behavioural dispositions of physical entities' (2022, 1). Given this, they can claim that the case concerning the universal *F*s pointing to its possible instantiations belongs to the domain of non-natural modality and thus require distinct treatment.[120] Or perhaps they can try to argue that, while the capacity or potential to be

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[119] Tugby, in fact, accepts something like this view. When addressing the worry that the Platonic theory might not be able to distinguish between uninstantiated universals that can possibly be instantiated and uninstantiated universals that cannot, he offers the following response:

> The answer is that the notion of a universal which cannot possibly be instantiated is, in my view, *incoherent*. In other words, the mere existence of a Platonic universal guarantees that it is instantiable, whether this be in the sense of natural or non-natural possibility. Why think this? The reason is that *what it means for an entity to be a universal is precisely that it be instantiable*. Quite simply, if an entity did not have the *potential* to be instantiated (metaphysically speaking), then I think we would have no reason to classify it as a universal as opposed to some other kind of entity. (Tugby 2022, 238-239)

[120] One reason for accepting this view is the thought that the universal *F*s pointing to its possible instances seems to constitute a case of *synchronic* modality. As Wang (2015, 463-464) argues, dispositionalism appears incapable of accounting for modal features of the world that are synchronic.

multiply instantiated is a fundamental feature of *F*, the capacity or potential to be manifested is not a fundamental feature of *D*. Given this, they can take the former, but not the latter, to require further metaphysical explanation.

Neither reply is without shortcomings, though. With respect to the former, it yields a disunified account of modality, which should be regarded as a cost of the view. Tugby, in fact, recognises this and argues for the prospects of extending his theory to non-natural modality (see Chapter 10 of Tugby (2022)). As for the latter, its success depends on there being a metaphysical principle which adequately distinguishes between the kinds of directedness that are non-fundamental and need to be reified and the kinds that are fundamental and need not to be reified. But—as far as I can see—there seems to be no feature of dispositions in general that renders their capacity to be manifested as non-fundamental. It seems, then, that the objector can in principle reject the idea that the capacity to be manifested is a non-fundamental feature of universals.

In the end, this issue may simply reflect differing views among metaphysicians about what counts as an adequate account of unmanifested dispositions. Suffice it to say, then, that the objection is not unanswerable for proponents of the two-tier solution. If some price must be paid in replying to this objection, then so be it.

4.8 Conclusions

I have argued for three things. First, dispositionalists, especially those who prefer the two-tier account, have no special reason to prefer a theory of transcendent universals over a theory of immanent universals or tropes, as the latter can be developed in similar ways that accommodate cases involving unmanifested dispositions. Second, when we consider what

In light of this, proponents of the two-tier account can hold that their account concerns natural modality, which concerns only *diachronic* modal features of the world.

metaphysical accounts should be given of objects, it appears that proponents of the universal-based and trope-based accounts must accept at least two fundamental categories if they wish to adopt the two-tier solution with full explanatory power. Finally, there is an alternative amphibian-based account that can explain the Central Principle while maintaining a genuine one-category ontology. Therefore, at least when qualitative parsimony is concerned, the amphibian-based solution is preferable to the other two approaches.

This concludes my exploration of the idea of extending the notion of amphibians to persistence and dispositions. Surely, much more can be said about these issues, and whether an amphibian-based account is ultimately preferable to universal-based or trope-based accounts cannot be settled solely on the basis of the considerations advanced here. For the time being, I am content with the thought that an amphibian-based account should be regarded as offering a genuinely interesting alternative. My hope is that further arguments in favour of such an account will emerge in future work.

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