A nonstandard re-evaluation of Lewisian metaphysics for the material world
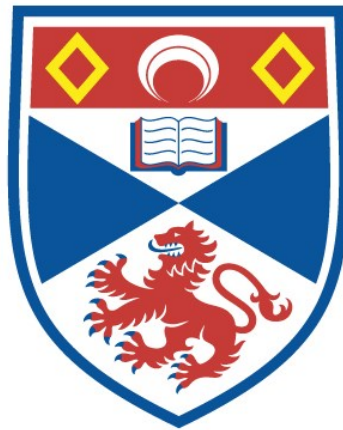
Andrea Oliani

A thesis submitted for the degree of PhD
at the
University of St Andrews

2025

Candidate's declaration

I, Andrea Oliani, do hereby certify that this thesis, submitted for the degree of PhD, which is approximately 64,300 words in length, has been written by me, and that it is the record of work carried out by me, or principally by myself in collaboration with others as acknowledged, and that it has not been submitted in any previous application for any degree. I confirm that any appendices included in my thesis contain only material permitted by the 'Assessment of Postgraduate Research Students' policy.

I was admitted as a research student at the University of St Andrews in September 2019.

I confirm that no funding was received for this work.

Date   23/11/2024   Signature of candidate

Supervisor's declaration

I hereby certify that the candidate has fulfilled the conditions of the Resolution and Regulations appropriate for the degree of PhD in the University of St Andrews and that the candidate is qualified to submit this thesis in application for that degree. I confirm that any appendices included in the thesis contain only material permitted by the 'Assessment of Postgraduate Research Students' policy.

Date   23/11/2024   Signature of supervisors

Permission for publication

In submitting this thesis to the University of St Andrews we understand that we are giving permission for it to be made available for use in accordance with the regulations of the University Library for the time being in force, subject to any copyright vested in the work not being affected thereby. We also understand, unless exempt by an award of an embargo as requested below, that the title and the abstract will be published, and that a copy of the work may be made and supplied to any bona fide library or research worker, that this thesis will be electronically accessible for personal or research use and that the library has the right to migrate this thesis into new electronic forms as required to ensure continued access to the thesis.

I, Andrea Oliani, confirm that my thesis does not contain any third-party material that requires copyright clearance.

The following is an agreed request by candidate and supervisor regarding the publication of this thesis:

Electronic copy

No embargo on electronic copy.

Date   23/11/2024   Signature of candidate

Date   23/11/2024   Signature of supervisors

Underpinning Research Data or Digital Outputs

Candidate's declaration

I, Andrea Oliani, hereby certify that no requirements to deposit original research data or digital outputs apply to this thesis and that, where appropriate, secondary data used have been referenced in the full text of my thesis.

Date   23/11/2024   Signature of candidate

The truth will set you free. But not until it is finished with you.

<div style="text-align: right;">

David Foster Wallace, *Infinite Jest*

</div>

Abstract

This Thesis is an attempt to look at the nature of the material world and some of the riddles that trouble our understanding of it from a broadly non-standard – or heterodox if you like – Lewisian point of view. That is, theoretical tools out of the usual Lewisian box are employed to further a Lewisian agenda in the metaphysics of material objects. In Chapter 1, a new theory of Universalism based on a theory of natural objects will be systematically presented and discussed. In Chapter 2, the cause of Permissivism in metaphysics will be defended against new threats from defenders of Conservatism in metaphysics. Finally, in Chapter 3, I show how a traditional package of Lewisian views consisting of Lewisian graded naturalness, Naturalness as Fundamentality, and Reference Magnetism leads to Nihilism about mereological composition and trumps our talk and thought. Accordingly, I will recommend the adoption of a new package consisting of Schafferian or scientific naturalness, the distinction of naturalness from fundamentality, and a new Reference Magnetism.

Acknowledgements

The PhD has been a wonderful journey, personally and intellectually. Incredibly challenging; incredibly rewarding. Now that it is coming to an end, it is right and proper to thank all the people that made the journey possible and worth-living. To these people, I owe much more than I can say. You truly are the reason why I am more than the sum of my parts.

First, thanks to all the people from the Department of Philosophy. Thanks to Aaron Cotnoir, my supervisor, from whom I have understood what it truly means to be an analytically rigorous metaphysician. With his brilliant insights, Aaron has always pushed me to do better and challenged me to attain the highest standard of precision and originality. Aaron is an intellectual force of nature, but he is also incredibly humble and good-hearted. If today I am a better thinker than I was, it is, for the most part, thanks to you. Thanks also to Franz Berto, the coolest co-supervisor one can hope for. Franz has always been very encouraging and caring, and has taught me how to do philosophy while having fun. Then, I would like to thank the Arché Metaphysics and Logic Research Group for having provided an amazingly welcoming place for philosophical discussion and given me the opportunity to learn about all sorts of different topics. Then, thanks to all my annual reviewers throughout these

4

comfortable. Thanks also to all the people from the CEED team I had the pleasure to work with. It really is an amazing team of amazing professionals: always nice and understanding. In particular, I would like to thank Cassice Last who involved me in lots of interesting projects.

Finally, I would like to thank my family: my father Giuliano and my mother Maria. Both have been impeccable examples of hard-working people with a profound sense of right. I cannot but thank my mum, who raised me with an unwavering sense of duty and believed in me like no one else. I owe you the man I am. No words could ever express my sense of gratitude towards you. Special thanks goes also to my partner Alessandra with whom I share the most meaningful parts of my life. You have been by my side also when it was not easy. Thanks to my late dog Milo. Almost 20 years of love cannot be forgotten. As much as I miss you, I am sure you are somewhere chasing the ball – or some cat. This work is dedicated to your loving memory. Honorable mention goes to my Italian friends, especially Chiara, Davide, Andrea, Demetrio, Pietro, and Federica. Thanks for always being there for me and giving me a reason to miss home.

Contents

10

Introduction

This Thesis develops new themes for a new, nonstandard Lewisian picture of the material world. In particular, three of them will motivate our unorthodox twist on the received view of Lewisianism:

(1) The development of a distinctive notion of naturalness for objects.

(2) The development of new defensive tools for Mereological Universalism against Conservatism in metaphysics.

(3) The development of a new package of views consisting of three key tenets: Schafferian or scientific naturalness, the distinction of naturalness from fundamentality, and a novel account of Reference Magnetism.

The first point stems from two intuitions:

(1.i) Composition is unrestricted.

(1.ii) There is a metaphysically meaningful distinction between wholes that are structurally robust and nomologically relevant and wholes that are structurally nonrobust and nomologically otiose. The first are natural wholes, while the second are unnatural wholes.

The former is rooted in the work of Lewis himself (1986a, pp. 211ff, 1991), whereas the latter is rooted in the work of Aristotle and his followers, especially the Medieval Aristotelians and Husserl. Consider the words of Lewis (1991, p. 79):

> I say that whenever there are some things, they have a fusion. *Whenever*! It doesn't matter how many or disparate or scattered or unrelated they are. [...] I am committed to all manner of unheard-of things: trout-turkeys, fusions of individuals and classes, all the world's styrofoam, and many, many more. [...]

And Aristotle (Δ.26 1023b26-36):

> We call a whole (1) that from which is absent none of the parts of which it is said to be naturally a whole, and (2) that which so contains the things it contains that they form a unity; and this in two senses—either as each and all one, or as making up the unity between them. [...] Of these things themselves, those which are so by nature are wholes in a higher degree than those which are so by art, as we said in the case of unity also, wholeness being in fact a sort of oneness.

These two hypotheses, if combined in a broadly Lewisian framework, allow for a new theory of Mereological Universalism and the development of a distinctive notion of "objectual naturalness".

The second point consists in showing how an abundant ontology of wholes supplemented by a theory of objectual naturalness can, in effect, provide the

basis for an elegant and powerful rebuttal of conservatism in metaphysics. Two of the most pressing criticisms from Conservatives are (i) that bizarre, scattered wholes systematically escape our notice despite being highly visible, and (ii) that the profligate ontology of Universalism cannot account for well-demarcated ordinary objects. My theory of Universalism can counter these worries effectively.

The third point consists of a critical assessment of a traditional package of Lewisian views: Unrestricted Composition, Lewisian graded naturalness, Naturalness as Fundamentality, and Reference Magnetism. It turns out that the package, properly understood, is internally incoherent and prompts a sort of "nihilistic collapse", according to which Lewisians ought to ditch their Universalism in favour of (a form of) Nihilism about mereological composition. Because of that, I suggest a profound revision of the traditional package that can plausibly pave the way for a new package that consists of Schafferian or scientific naturalness, separates naturalness from fundamentality, and adheres to a new doctrine of Reference Magnetism.

These three themes unfold into three Chapters (and two Appendices). Each Chapter can be appreciated – more or less – on its own but all Chapters contribute to depict one big picture. Eventually, a re-evaluation of Lewisian metaphysics for the material world will have been attained.

The Plan

The plan of this Dissertation unfolds as follows:

In Chapter 1, I offer new work for a theory of Mereological Universalism.

In particular, I will offer a critical assessment of the standard conception of Universalism and unpack it as consisting of three main tenets: Unrestricted Composition, Unstructured Composition, and Compositional Egalitarianism. Unsatisfied with the standard conception and, especially, with its expressive limits, I proceed to develop a new form of Universalism that while retaining the original generative proposal, accepts a structured conception of composition and metaphysically meaningful distinctions among composites. I call this view *Structured Universalism* (SU). The gist of SU is that there are all sorts of wholes, but only a minority of them are structurally robust and nomologically relevant: the *natural wholes*. All the others are structurally nonrobust and nomologically otiose; they are *unnatural wholes*. To further this nonstandard conception of Universalism, I will supplement classical mereology with a theory of naturalness for objects, rather than properties. The upshot of this theory of natural objects is an abundant ontology of wholes equipped with what I call *Natural Principles of Unity* (NPU), which are naturalness measures for objects, i.e. measure functions from objects to degrees of naturalness. I will attempt the development of a (proto-)measurement theory of natural objects and, in a pure theory-building spirit, offer five different SU models: the fundamentalist SU model, the gunky SU model, the monist SU model, the scientific SU model, and the emergentist SU models. Each of these models, which will give us back different pictures of the metaphysical structure of the material world, will be presented and assessed. Finally, I present some key benefits of SU, among which, there are a Lewisian reading of the "mere sums" vs "genuine wholes" distinction of the Aristotelian-Husserlian tradition, a novel treatment of vague restricted

14

composition without vagueness and restricted composition, and a plausible explanation of why the folks disagree with Universalists.

In Chapter 2, I expand the agenda of SU. In particular, I defend Permissivism against Conservatism in metaphysics. Note that Permissivists in metaphysics are those who believe that there are ordinary as well as extraordinary objects, e.g. dogs, trees, coffee cups, but also trogs and trout-turkeys, i.e. respectively, objects composed out of dogs and trees (Korman 2015) and objects composed out of undetached halves of trout and undetached halves of turkeys (Lewis 1991). Conservatives in metaphysics, instead, are those who believe that there are only ordinary objects such as dogs and trees. So, in this Chapter, I address Dan Z. Korman's contention that our ordinary intuitions and perceptual experiences reject Permissive beliefs about the world, while they do justify Conservative beliefs about it; and Kathrin Koslicki's contention that Permissivism cannot – while Conservatism can – reclaim the good-standing of our use of singular reference as well as the idea of well-demarcated objects, not even if supplemented with a theory of naturalness. I argue that both Korman and Koslicki are wrong, especially in the face of Structured Universalism. Indeed, the gist of Korman's challenge against Permissivism relies on a misguided understanding of it as the thesis "there are swathes of *highly visible* extraordinary objects, right before our eyes, that ordinarily escape our notice" (*ibid.*, p. 13, italics added). I will show that this is not true. Moreover, I will develop an account of *perceptual naturalness* according to which (some of) the natural wholes are (intrinsically) eligible to serve as the content of our perceptual experiences and beliefs, whereas the unnatural wholes are (intrinsically) ineligible to do so. Accordingly, SU

gives us an elegant explanation of why trogs and trout-turkeys systematically escape our notice: they cannot be perceived (at least in all worlds compatible with our perceptual experiences). Korman's own proposal will also be discussed, criticized, and rejected. The gist of Koslicki's Challenge, on the other hand, relies on the idea that Permissivism lacks the expressive resources to provide a world of metaphysically structured objects that could serve as the objects of our singular reference. I argue that this is not true if Permissivists embrace SU. Indeed, SU with its natural wholes is well-placed to counter these Conservative criticisms. Moreover, I argue that Koslicki is wrong in taking the Conservatives immune, while the Permissivists are prone, to certain seemingly intractable issues such as the Problem of the Many.

In Chapter 3, I investigate how a traditional package of Lewisian views, which I call the "standard Lewisian package", could lead the Lewisians to a sort of (Non-Eliminative) Nihilistic collapse. That is, the Lewisians who are eager to hold a package of views consisting of standard Lewisian graded naturalness, Naturalness as Fundamentality, Unrestricted Composition, and Reference magnetism end up trumping our talk and thought to the effect that we should be assigned nihilistic talk and thought-content. The upshot is that Lewisians cannot be Universalists, but should be Nihilists *à la* Sider (2011, 2013), according to whom while composite objects exist, they are not fundamental and should, thus, be left out of the fundamental structure of the world. I establish this conclusion through a careful and detailed analysis of the doctrine of Reference Magnetism, its various forms, and implications. Indeed, I will, first, identify three forms of magnetism: Weak, Moderate, and Strong. Then, I will argue that Lewisians should opt for

16

Strong Magnetism, according to which eligibility *always* trump use. This will trigger my so-called "nihilistic collapse". To solve the issue, I will propose the adoption of a new, nonstandard Lewisian package of views, which consists of Schafferian or scientific ungraded naturalness, the distinction of naturalness from fundamentality, Unrestricted Composition, and a new account of Magnetism. Under the new package, referential magnetism will have two dimensions: a metaphysical, context-independent one, and another non-metaphysical, context-dependent. In particular, it will allow for reference to be fixed, contextually, by means of assignment of eligible referents that are most salient in a given *context of inquiry*. Ultimately, a new Lewisian view of the material world will take shape.

This Thesis, note, contains also two Appendices, which should be taken as supplements to Chapter 2 and Chapter 3. In particular, in Appendix A, I briefly touch upon Anti-Realist Conservatism, according to which our object beliefs explain the object facts. I consider Mereological Constructivism/Mereological Idealism which states that composite objects are constructed or created by our interests, intentions, ways of thinking, and even values. In a theory-building spirit, I consider Anti-Realism correct and try to sketch an anti-realist reading of SU to the effect that there are all sorts of conceptual constructions but some are natural, while others are unnatural. I argue that the view could be of interest for those with anti-realistic leanings.

In Appendix B, instead, I discuss the case of Strong Magnetism in gunky worlds, i.e. worlds where everything has a proper part. I show that in those worlds, reference and truth-conditions are impossible to fix. However, I argue that friends of magnetism and gunk should not despair since our new

17

Lewisian package can elegantly and effectively solve the issue.

Chapter 1

New Work for a Theory of Universalism

1.1 Introduction

"What is there?", Quine once famously asked[1]. Human and nonhuman animals (people and, say, dogs, trout, and turkeys), mugs of coffee and laptops,

---

[1]Quine asks this question in his "On What There Is" (1948) and, there, answers by saying that what matters, in ontology, are the *ontological commitments* of a given theory, i.e. all and only those entities a theory must refer to be true. This, for Quine, means regimenting a theory in the idiom of classical first-order predicate logic and, then, reading off the theory's ontological commitments from its existentially quantified sentences – as the slogan goes: "to be is to be the value of a variable" (*ibid.*, p. 15). So, for instance, if "$\exists x$ Glucose(x)" and "$\exists x$ Sea-slug(x)" are sentences of our theory, then our theory is ontologically committed to glucose molecules and sea-slugs (i.e. it says that *there are* glucose molecules and sea-slugs) because these are the entities the theory must accept/take as values of its bound variables in order to be true. (For further details see also Quine 1951a, 1951b, 1960, p. 242, 1968, pp. 91-113, and van Inwagen 1998). With that being said, let me stress that whether Quine was ultimately right or wrong about the nature of ontology falls largely out of our present concerns. But we will assume, in Quinean fashion, that whatever there is exists and *vice versa* so as to avoid unnecessary complications when discussing the Special Composition Question from van Inwagen (see below), which is framed "quineanely" (van Inwagen himself, note, is a staunch Quinean). But nothing crucial hinges on this. Our concern, here, is the metaphysics of material objects.

the St Andrews Cathedral and flowers, molecules (e.g. DNA, water/H_2O, and glucose/$C_6H_{12}O_6$), cancer cells, subatomic particles (quarks and leptons), and whatnot, are all things that we would presumably be happy to mention in our answer[2]. But whether we *should* do so, ultimately, depends, among other things, on how we answer to van Inwagen's *Special Composition Question* (1987, 1990)[3]:

(SCQ) For any xx whatsoever, what are the necessary and jointly sufficient conditions according to which *there is* a y such that the xx compose[4] y?[5]

---

[2]Perhaps, plain common sense would not be enough to provide such an answer. But scientifically informed common sense would. As such, I would consider this sort of answer *pre-philosophical*, but not *pre-theoretical* because it would be devoid of philosophical analysis, but it would be theoretically informed nonetheless.

[3]But see also Hestevold (1981) for an early presentation of SCQ-like questions.

[4]Note that according to standard usage, we can talk of wholes, composite objects, mereological fusions, and mereological sums interchangeably.

[5]A few specifications are due, even though we will have more technical discussion about mereological machinery later on. First, the background mereological theory we will work with is *classical extensional mereology* or *classical mereology* due to Leśniewski (1916, 1927-1931) and Leonard and Goodman (1940) (see Hovda 2009, Simons 1987, and Cotnoir and Varzi 2021). Second, composition should be understood as that *multigrade/variably polyadic/many-one* relation that holds between a plurality of objects (i.e. the composers or the parts of a whole) and a single object (i.e. the composite object or the whole having parts). This is why the SCQ makes use of *plural variables* such as "xx", "yy", and "zz" as well as *singular variables* such as "x", "y", and "z" (for more details on mereology supplemented with plural machinery see especially van Inwagen 1990, Ch. 2). Then, we want to say that proper, genuine cases of composition are those that hold between the *proper parts* of a whole and the whole, while improper, "degenerate" cases of composition are those that hold between an object and itself. Indeed, we say that x is a proper part of y if and only if x is a part of y but $x \neq y$, while that x is an improper part of y if and only if $x = y$. (Improper parthood, that is identity as a limit case of parthood – which, note, follows from the standard treatment of parthood in classical mereology, according to which parthood is reflexive and, hence, everything is part of itself – can be puzzling but can be somewhat tamed, conceptually, by thinking of it as that case where x is the "biggest part" of y; in fact, so big that completely covers y and, thus, makes x and y effectively mereologically indiscernible. And this, classically, entails that $x = y$ because, in classical mereology, parthood is *extensional*, hence "no difference without a mereological difference-maker".) Of course, only proper parthood guarantees us genuine mereological structure and, so, we will say that x is composite if and only if it has proper parts. For now,

Indeed, considering that most – perhaps all but the subatomic particles of elementary physics such as quarks and leptons[6] – of the material objects in our world seem to be composite objects, it can hardly be overestimated how important the SCQ is in establishing whether there are, say, dogs, trees, mugs of coffees, microscopes or glucose molecules.

According to van Inwagen (*ibid.*), the Special Composition Question can be answered in three possible ways:

(Universalism): For any xx, there is a y such that the xx compose y if and only if the xx exist.

(Restrictivism): For any xx, there is a y such that the xx compose y if and only if the xx satisfy a non-trivial condition C.

(Nihilism): For any xx, there is a y such that the xx compose y if and only if there is only one of the xx[7].

---

this is enough to satisfy our theoretical needs, but for more details, especially on issues concerning the extensionality of classical mereology, see Cotnoir (2010), Cotnoir and Varzi (2021), Ch. 2, and Varzi (2008). Finally, I would like to note that my formulation of the SCQ follows more closely the notational variant discussed in Spencer (2021) – who in turn follows Markosian (1998a, 1998b, 2008, 2014) – than the original one discussed in van Inwagen (1987, 1990). Nothing substantive hinges on this, but I prefer the Spencer-Markosian formulation to van Inwagen's own because I believe it does a better job in stressing the fact that the SCQ asks "In which cases is it true of *certain objects* that *they* compose something[?]" and, thus, distinguishes it from the neglected Inverse Special Composition Question (ISCQ), which, on the other hand, asks "In which cases is it true of *an object* that there are objects that compose *it*?" (van Inwagen 1990, p. 48). Thus, while both the SCQ and the ISCQ asks, generally, "Under what conditions does composition occur", the SCQ tackles the compos*ers*, the ISCQ the compos*ite*. For further details see Hawley (2004, 2006a, 2006b, 2014) and Markosian (1998a, 1998b).

[6]If this is correct, then quarks and leptons could be cases of *mereological atoms* or *simples*, that is objects having no proper parts but just themselves as improper parts (after all, everything is self-identical!).

[7]The rationale here is the following one: if there is only one of the xx, then y has to be composed by just one part. We said before that proper, genuine composition consists in having proper parts. But having just one proper part, in classical mereology at least,

According to Universalism, composition is a rather undemanding relation; for there be a y composed out of some xx, you just need the xx, no matter how spatiotemporally and causally unrelated[8]. Thus, Universalism has it that composition is *unrestricted* and this entails the existence of swathes of mereological monstrosities, e.g. nosetowers[9], trogs[10] and trout-turkeys[11], besides that of more familiar dogs, trees, trout, and turkeys[12]. In a sense, Universalism is the natural metaphysical counterpart of the unrestricted composition axiom of classical mereology – the formal part-whole theory due to Leśniewski (1916, 1927-1931) and Leonard and Goodman (1940) – and, thus, seems to be a sort of go-to metaphysical option for those who accept classical mereology. According to Restrictivism, instead, composition is more demanding and it is *restricted* to those specific cases where the xx satisfy the relevant condition C. Depending on how restrictive is C, we may have

is not possible because of the idea that if x is a proper part of y, then x is part of y *and* $x \neq y$. If x is the sole proper part of y there seems to be no mereological difference between x and y despite the fact that $x \neq y$. Proper mereological complexity requires *some* proper parts. But given that anything is the improper part of itself, there can be something having just itself as (improper) part: a mereological atom.

[8]This is usually discussed within the context of material objects solely. We will follow suit. But Hudson (2006) and van Inwagen (1990) are both right in noting that, strictly speaking, Universalism should know no categorial restriction and, hence, should countenance *transcategorial wholes* composed out of a computer, the Taj Mahal, and the number 16 (Alston 1996, p. 171), or out of you and the color blue (van Inwagen 1987, p. 35), or even out of your occurrent thoughts, an attack of measles, and a lump of cheese (Geach 1991, p. 253). Such entities would be even stranger than trout-turkeys and trogs, no doubt, but they do nothing to change the original motivations behind the Universalists' adhesion to Universalism; they merely broaden the scope of them.

[9]Nosetowers are objects composed out noses and towers, e.g. Lewis's nose and the Eiffel Tower.

[10]Trogs are objects composed of dogs and trees (see Korman 2015).

[11]Trout-turkeys are objects composed out of half-undetached-trout and half-undetached-turkeys (see Lewis 1991, pp. 7-9).

[12]Some notable adherents to Universalism are Cotnoir (2016), Goodman (1951, 1956), Leonard and Goodman (1940), Leśniewski (1916, 1927-1931), Hawthorne (2006), Lewis (1986a, pp. 212-3, 1991), Sider (2007), Van Cleve (2008), and Varzi (2000).

only conscious beings[13], living organisms[14], or familiar objects from ordinary experience and the sciences[15]. Finally, according to Nihilism, composition is a trivial relation holding improperly only between mereological atoms and themselves. Consequently, there are no genuine composite objects such as dogs and trees but, perhaps, only mereological atoms arranged dogwise and treewise[16].

Now, in this Chapter, I am especially interested in assessing the expressive adequacy of Universalism and its connection with a theory of wholes. Hence, I will suppose, for the sake of argument, that Universalism is the correct answer to the SCQ and that its generative power, elegance, and alleged immunity to the dangers of arbitrariness, vagueness, and anthropocentrism are real benefits of the theory[17].

My aim is to show that Universalism, as standardly understood, faces severe expressive shortcomings that hamper its theoretical potential as a metaphysical theory of material objects. To overcome such shortcomings, I propose to supplement Universalism with an object-theoretic rather than property-theoretic account of Lewisian naturalness. In other words, I propose to supplement Universalism with a theory of Lewisian naturalness for wholes to the effect that there are all sorts of wholes *and* metaphysically meaning-

---

[13]See Merricks (2001).

[14]See van Inwagen (1990, Ch. 9).

[15]See for instance Carmichael (2015), Koslicki (2008), Korman (2015), and Markosian (1998a, 2014), who, despite the very different theoretical frameworks adopted, share a commitment to what Markosian (2014) calls "mereological sanity".

[16]This is a sort of Quinean paraphrase that aims at explaining away our reference to composite objects while "saving the appearances", so to speak, of composite objects. For the details see van Inwagen (1990) and Dorr and Rosen (2002).

[17]Whether this turns out, ultimately, to be the truth will not concern us here. For those who have strong feelings against Universalism, this work could be read as an exercise in suppositional thinking.

ful differences between them. In particular, this new theory, which I call *Structured Universalism*, acknowledges a principled, metaphysical difference between *natural* and *unnatural wholes*. The outcome will prove attractive for those Lewisian Universalists that are dissatisfied with the orthodoxy and, more generally, for all those Universalists who are interested in new theoretical pathways to a theory of wholeness.

In Section 1.2, I unpack the standard conception of Universalism and show that it is incapable of drawing any metaphysically meaningful difference between "structurally robust" or *unified wholes* and "structurally non-robust" or "scattered wholes". In other words, between dogs and trogs. This happens because of its reliance on three theses: *Unrestricted Composition*, *Unstructured Composition*, and *Compositional Egalitarianism*. In Section 1.3, I show how Universalism, as standardly understood, faces expressive inadequacy *vis-a-vis* our best total theory of the world. It turns out that some metaphysically meaningful difference among wholes is required for explanatory reasons. In Section 1.4, I solve our predicament by presenting a new theory of Universalism that consists of an abundant ontology of wholes supplemented with a theory of naturalness for objects. We will call the result *Structured Universalism* (SU). SU will give us the opportunity to develop a full-fledged theory of natural objects by means of which we can rank the structure of objects based on their degree of naturalness. This will be done, first, by presenting a distinctive notion of *objectual naturalness* and, then, by articulating what I call the "Natural Principles of Unity" (NPU), i.e. measure functions that map wholes to degrees of naturalness. Then, in 1.4.4, we will dive into theory-building. In particular, I present five possi-

24

ble (semi-)formal SU models to show how, depending on the metaphysical conception of the world and the preferred interplay between the NPU and parthood/composition, we can obtain different pictures of natural objects. In the spirit of bare theory-building, I will remain noncommittal on which SU model we should opt for. In Section 1.5, I articulate some crucial benefits of SU: namely, reconciling Universalism with our best science; developing a Lewisian reading of the Aristotelian-Husserlian "mere sums" vs "genuine wholes" distinction; closing the gap between Restrictivism and Universalism; and reconciling Universalism with our perceptual knowledge of the world.

1.2   Standard Universalism

As we have seen in the Introduction, Universalism is understood as the thesis that composition is unrestricted: whenever there are some things xx, then there exists something composed out of them. However, the standard conception of Universalism, I contend, does not really consist of just Unrestricted Composition, but also of two other related theses I call *Unstructured Composition* and *Compositional Egalitarianism*:

(Unrestricted Composition): Whenever there are some things xx, then there exists something composed out of them.

(Unstructured Composition): Structure[18] does not matter in composition.

---

[18] "Structure", here, is really a shorthand for the "metaphysical structure of material objects". In other words, that which tells us how material objects are metaphysically configured.

(Compositional Egalitarianism): There are no metaphysically different kinds

of composites.

Unrestricted Composition makes composition a "cheap"[19] generating rela-
tion[20]: you take some xx and "automatically" get them to compose a whole[21]
– not dissimilarly, perhaps, from set-formation whereby you can form a set
of xx automatically by "lassoing" the xx[22].

This, for Standard Universalism, has consequences not only for the num-
ber of objects, but also for their metaphysical make-up. Indeed, if wholes are
generated "on the cheap", "automatically" from their parts – that is, with no
satisfaction of any selected non-trivial condition C from their parts –, then

---

[19]With this, note, I do *not* mean that composition is *ontologically innocent* in the sense
that the whole is "nothing over and above" the parts that compose it. What I mean is
only that in order to compose "something over and above", the xx are not required to
satisfy any particular condition. Moreover, ontological innocence is often associated with
Composition as Identity (CAI), or the thesis according to which composition is analogous
to or a form of identity, which is a thesis whose defense or criticism falls completely out
of our current concerns. But for more on this see Cotnoir and Baxter (2014).

[20]On "generating relations" see Goodman (1958) and Lewis (1991, pp. 38-41).

[21]This aspect is stressed by van Inwagen (1987, p. 35, 1994).

[22]Two clarifications. First, the "lasso" metaphor can be found in Lewis (1991, pp.
42-45) while introducing the idea of forming a set by "collecting" or "gathering" some
elements. Second, the analogies between set theory and mereology are not accidental. In
fact, as it is known, the early days of classical mereology, i.e. those of Leśniewski (1916,
1927-1931) and Leonard and Goodman (1940), are days of *nominalistic* reconstruction of
set theory (but similar attempts could be found also in Lewis 1970, 1991, 1993b). Both
Leśniewski, on the one hand, and Leonard and Goodman, on the other, understand the
mereological notions of "whole" and "part" as nominalistically acceptable alternatives to
those of "class" and "member", charged with platonism. Indeed, it is not difficult to notice
how Unrestricted Composition closely resembles *Unrestricted Comprehension* from Naive
Set Theory according to which for any condition "ϕ", there is a set whose members are
all and only the ϕ-ers:

$\exists x \forall y (y \in x \leftrightarrow \phi x)$

Of course, Unrestricted Comprehension falls prey to Russell's paradox, but, as Leśniewski
noted, Unrestricted Composition does not. After all, the original culprit in Naive Set The-
ory was to allow formulas such as "$x \notin x$". However, the natural mereological counterpart,
i.e. "x is not part of x", is ruled out by the reflexivity of parthood. For more on this see
Cotnoir and Varzi (2021, §5.4.1) and Eberle (1970).

structure plays no metaphysically meaningful role in the composition. Unrestricted Composition, under Standard Universalism, supports Unstructured Composition.

This point is not new, but it is worth noting that while some such as Korman (2015), Koslicki (2007, 2008), Fine (1994b, 1994a, 1999, 2010), Markosian (1998a, 2014), Simons (1987, Ch. 9, 2006), van Inwagen (1990, Ch. 9) see it as a reason *against* Standard Universalism, others – prominent Universalists – like Fairchild and Hawthorne (2018), Hawthorne (2006, p. vii), Hudson (2001, pp. 108-112), Lewis (1986a, pp. 211-213), Rea (1998), and Van Cleve (1986, p. 145, 2008) see it as a reason *in favour* of it. Indeed, for opponents of Unstructured Composition, it fails to acknowledge that certain objects such as dogs and trees have metaphysically meaningful *unity*, while for proponents thereof it does away effectively with arbitrariness, vagueness, and anthropocentrism. Consider, for instance, Koslicki (2008, pp. 175-176, italics added) and Fine (2010, p. 561, italics added) on the one hand:

> [...] standard mereology does not have the resources to capture properly [...] the part/whole structure of ordinary material objects [...]. Unless, then, we are independently moved to recognize a category of objects whose composition is as unconstrained as that of standard mereological sums, we may proceed on the assumption, which is in fact confirmed by independent evidence, that the world is instead populated by mereologically complex objects that have the characteristics of *structured wholes* [...].

[In] classical mereology [..] a whole is a *mere sum*, or 'aggregate' or 'fusion', formed from its parts without regard for how they might fit together or be structured within a more comprehensive whole.

And on the other, Van Cleve (1986, p. 145):

Suppose, then that we agree to admit at least some scattered objects into our ontology [Van Cleve mentions the swarms of subatomic particles composing ordinary material objects, "the land mass of the state of Michigan", and "tokens of the letter 'i'"]. Does there remain any way to exclude the [scattered composites, e.g. trogs and trout-turkeys] the [Standard Universalist] believes in? I doubt that we can find any principle for doing this that is not either vague, arbitrary, or a matter of degree. [...] One could go on seeking [principles of unity] and trying out various combinations and weightings of them, but I am convinced that the task is bootless. Even if one came up with a formula that jibed with all ordinary judgements about what counts as a unit and what does not, what would that show? [...] The factors that guide our judgements of unity simply do not have that ontological significance [...].

And Hudson (*ibid.*, pp. 108ff):

Consider principles [of unity] that emphasize perceptible continuity, or independent movability, or environmental contrast. These

principles do not stand under even moderate scrutiny, however. [...] So, why the tendency to recognize the Earth but make fun of the suggestion that DogCat [i.e. an object composed out of a dog and a cat] exist? [...] [Certainly, it cannot be that] there exist certain physical bonds that unify the various parts only in the case of the Earth, for we can also make that claim on behalf of DogCat by appealing to the constant gravitational attraction between my pets. [...] [What], then, is the telling difference? I very strongly suspect that there is no principled division here.

Van Cleve and Hudson's quoted passages show very clearly that for Standard Universalists, either there is nothing metaphysically meaningful in the notions of "unity" – and "structure" I would add – or that if there is, it leads to some form or another of Restrictivism about composition, which, in turn, leads to arbitrariness, vagueness, and anthropocentrism. The second option is a no-go for obvious reasons, so there must be nothing metaphysically meaningful in the notions of "unity" and "structure". Once accepted this, it is no big deal for Standard Universalists to accept what I call Compositional Egalitarianism, or the thesis that there are no *metaphysically meaningful* different kinds of wholes. After all, if unity and structure are metaphysically out of the question, then there is no point in discriminating wholes on the basis of how unified and structured they are.

This package of theses, as far as I am concerned, represent what the standard conception of Universalism really amounts to and holds regarding the metaphysical structure of material objects.

I think there are good reasons to be dissatisfied with this conception

of Universalism and take the call of the opponents: unity and structure *should* matter and there *should be* metaphysically different kinds of wholes. Opponents, though, have usually thrown off the yoke of Unstructured Composition and Compositional Egalitarianism at the expense of Unrestricted Composition, i.e. by embracing some form or another of Restrictivism, or by accepting contentious theoretical machinery, e.g. Aristotelian Forms (e.g. Koslicki 2007, 2010, Fine 1994a, 1994b, 1999, 2010), Husserlian integration (Simons 1987, Ch. 9), or life (van Inwagen *ibid.*). Take, for instance, Aristotelian Forms, one of the main contenders for the role of principles of unity. These should be formal (i.e. non-material) proper parts of wholes dictating how the wholes should be structured. What are exactly these formal proper parts? We do not know. Aristotelian Forms are *prima facie* strange and, admittedly, it is hard to say how supplementing composition with Aristotelian Forms would make us any wiser. We are but left wondering whether there is a more palatable third way between the Aristotelian suggestions and the theoretical tradition of Leśniewski, Goodman, and Lewis.

The solution I will propose later, I maintain, is what Universalists should be looking for: namely, Unrestricted Composition supplemented with a suitable object-theoretic notion of naturalness. It is an elegant, nonstandard form of Universalism that does away with Unstructured Composition and Compositional Egalitarianism while keeping a strong Lewisian aroma.

Before, though, we must appreciate *why* Universalism, under the standard conception, needs a theoretical upgrade. Hence, in the next Section, I will show that Standard Universalism faces expressive and explanatory shortcomings that hinder its adequacy *vis-à-vis* our best total theory of the world.

1.3 Explanatory Issues for Standard Universalism

1.3.1 Our Best Science and Its Objects

Let us consider our *best total theory*, i.e. our best "sum total of all enquiries into the nature of things" (Armstrong 1978, p. 8), i.e. our best true description of the whole of reality. Presumably, our best science[23] should be part of it. That is, quantum mechanics, classical physics, molecular biology, chemistry, zoology, ..., (or suitably ideal versions thereof) should be part of it.

If this is right, then our best total theory comprises mereologically simple objects such as muons, electrons, quarks, gluons *and* mereologically complex objects such as dogs, trees, chairs, DNA molecules, cancer cells, planets, and so on. Even *prima facie*, all these objects are importantly different from trogs, nosetowers, trout-turkeys, and an object composed out of my laptop, Abraham Lincoln's hat, and a particle trapped on the event horizon of a black hole. What is that? I say the objects of our best science (i) form classes of qualitatively similar objects, while gerrymandered objects form miscellaneous classes of qualitatively dissimilar objects; (ii) play an explanatory role in the laws of nature, while gerrymandered objects play no such a role and do not account for nature's mechanisms, e.g. DNA, RNA, and proteins are crucial for explaining the process of life, dogs and sea-slugs are

---

[23]In this Chapter, I will sometimes refer to our best science also in terms of "total science".

crucial for explaining evolution, stars are crucial for explaining the universe, blood cells are crucial for explaining the supply of oxygen to our tissues, while nosetowers, trogs, and trout-turkey are crucial to explain nothing in nature; (iii) are genuine causal *loci*, while gerrymandered objects, e.g. while chairs can shatter windows, presumably the object composed out of my laptop, Abraham Lincoln's hat, and a particle trapped on the event horizon of a black hole can do nothing[24]. In short, the objects of our best science *carve nature at the joints*, while gerrymandered objects do not.

The general point is that our best science acknowledges only those objects that are *nomologically relevant*, that is eligible to play a meaningful role in lawful explanations of the world. And, seemingly, such nomologically relevant objects exhibit some sort of *structural robustness* or, if you want, *unity*[25].

Now, the lesson for the Universalist is not that there are only the robust objects of our best science. First, because we are Universalists, we do not want to confine composition. Second, because gerrymandered, nonrobust objects play a meaningful role in our theorizing: eschewing arbitrariness, vagueness, and anthropocentrism. Third, because it may very well be that our best science simply ignores nonrobust, gerrymandered objects, especially

---

[24]If we believe in causal novelty, we could add that human and nonhuman animals *qua* conscious beings may have novel mental causal powers because of their consciousness, while, presumably, nosetowers and trout-turkeys have none of that because they are not, in any genuine sense, conscious (cf. Merricks 2001).

[25]Two caveats. First, note that I do not necessarily think that all objects that exhibit such structural robustness or unity are structurally robust or unified in *the same way* – maybe we think a table and a muon are different in how robust/unified they are. In fact, later on, I will show how we can have different *degrees of unity* for different objects. Second, I do not necessarily wish to align with our manifest image-notion of unity for the very reason that I am not sure what such a notion should be. But I accept it as a virtue that the notion with which I am going to work comes close enough to that of our manifest image to be intuitively appealing.

given their explanatory irrelevance for the laws. And fourth, because the space of metaphysical possibilities, plausibly, outstrips the space of nomological possibilities and, thus, there could possibly be robust objects in nomologically impossible worlds[26]. So, it is not true that if nonrobust objects play no meaningful explanatory role in our best science, they do not (absolutely, unrestrictedly) exist.

The lesson is, rather, that even if we allow for the existence of all sorts of robust and nonrobust objects, it is true that at least some of these objects are expected to *be* explanatorily relevant for our best science. In short, some of these objects are expected to *be* robust. As I am going to show, this turns out to be a challenging lesson for the Universalist.

1.3.2 The Challenge

Our best "sum total of all enquiries into the nature of things" (Armstrong *ibid.*), as we have seen, should include our best science. But it should include also our best metaphysics of material objects – after all, it would not be complete without the correct theory of composition (i.e. answer to the SCQ), the correct account of whether wholes are robust or nonrobust, the correct account of whether wholes are all metaphysically on a par, and so on. Accordingly, we suppose Universalism is true and provides us with such a metaphysics. Then, a predicament ensues: the compositional demands of our best metaphysics and those of our best science will pull in opposite directions thereby letting our best total theory's internal coherence falter. The

---

[26]Ideally, those objects can still be nomologically relevant in their own worlds in the sense that they play an explanatory role in the laws of nature of their owns wolds – of course, such laws are incompatible with ours.

culprit will, ultimately, be the unstructured and egalitarian conception of composition that lies at the heart of Standard Universalism.

We have seen that Universalism, under the standard conception, relies on the Unrestricted Composition + Unstructured Composition + Compositional Egalitarianism package. Therefore, Universalism dictates an abundant ontology of nonrobust wholes, that is wholes generated by means of an unstructured relation of composition, all metaphysically on a par. On the other hand, we have seen that our best science relies on nomological relevance and, therefore, it dictates an ontology of robust wholes, that is wholes generated by means of a structured relation of composition. These demands are in clear contrast with one another. Which should our best total theory accommodate?

I think we have two options here: either the demands of our best science are serious or they are not. If the first option holds, then Universalism is not up to the challenge and simply fails. If, instead, the second option holds, then Universalism owes us a story of why it is so. I take this to be really a choice of evils: the first option leads Universalism to an admission of theoretical impotence, while the second leads Universalism to regrettable strategies. Every cloud has a silver lining, though. In fact, I say there is a way for the Universalists to go for the first option for the better: namely, by giving up their commitment to Unstructured Composition and Compositional Egalitarianism, and revising their theoretical machinery accordingly. But I think not a few proponents of Standard Universalism would be tempted to go for the second option, instead. So, before we see how the Universalists can successfully meet the challenge, let me briefly point out why the second

option would be a swing-and-miss.

If the Universalists are willing to defy the demands from our best science, they have two options: *rejecting* the legitimacy of those demands or trying to *deflate* them. The former would amount to adopting some sort of radically non-naturalist stance[27], according to which, metaphysics and science are *incommensurable* domains of inquiry, with different aims and methodologies. Universalism is, thus, free to advance its metaphysical propositions[28] with *no* regards whatsoever for what science dictates. This would, indeed, save the day for Universalism, but at what cost? Admittedly, this non-naturalism does not look promising. After all, it is hard to deny the importance of our best science and even without opting for hardcore naturalism *à la* Ladyman and Ross (2007), according to which metaphysics should only be acceptable within the bounds of our best science, it seems wiser to avoid such a schism and maintain – minimally – at least that metaphysics and our best science should, *whenever possible*, avoid conflicts with the content of our best science, even though metaphysics and science remain independent domains of inquiry. If this is correct, then the conflict remains, and Universalism has still to account for demands of our best science to the effect that some wholes

---

[27]Here, I am thinking of what Nina Emery (2023) calls *content naturalism* or the view that metaphysics should, whenever possible, avoid conflicts with the contents of our best science, rather than *methodological naturalism* or the view that metaphysics should, whenever possible adopt the scientific method. The two views are independent since the former but not the latter allows metaphysics to enjoy some methodological autonomy, which I would like to preserve. Thus, *content non-naturalism*, rather than *methodological non-naturalism*, would be the view that metaphysics has no such imperative of respect towards the contents of our best science. Both doctrines admit of different versions with different degrees of strength. Here, we have no space to go into the details. This is enough to have an intuitive grasp of the notions we are working with. But for more on this see Emery (2023).

[28]With this I mean "proposals" not what sentences express.

are robust and structured. Hence, rejecting the legitimacy of those demands has failed.

Perhaps, though, there is a way to successfully deflate those demands. In this case, the idea is that Universalism and science disagree on composition and wholehood, but only *apparently*. One strategy familiar to Universalists would be that of *tacit restricted quantification* (cf. Lewis 1986, p. 213, 1991, §3.5). This goes as follows: our best science is unfamiliar with and uninterested in Unrestricted Composition, hence it tacitly restricts composition so as to acknowledge only those composites that fall under its theoretical interests. Thus, the demands of our best science, just like those of our ordinary thinking, are really the manifestation of a limited interest in a familiar ontology of dogs, trees, laptops, chairs, sea-slugs, and whatnot. Robustness is only an intuitive but arbitrary and anthropocentric *desideratum*. Once we open up the quantifiers and unleash the unconstrained generative power of Unrestricted Composition, we understand that Unstructured Composition and Compositional Egalitarianism are also true and, thus, that there no demands to meet for Universalism. But this seems to me to be utterly irrelevant, if not wrong altogether. Even if it is true to say that our best science tacitly restricts the scope of its quantifiers so as to range only over familiar wholes, a fact we may even agree upon, our issue, it is orthogonal to the present issue. Discriminating between robust and nonrobust wholes, demanding a structured conception of composition, is something that does not touch Unrestricted Composition, but Unstructured Composition. In other words, it is not an issue about *how many* objects there are, but rather about *how structured* are these objects. So, even if we open up the quantifiers, that

36

is even if we allow all sorts of wholes to exist, our problem is here to stay. Hence, deflating the demands of our best science has failed as well.

All in all, I suggests the Universalists to embrace failure and to accept their theoretical shortcomings for the better. We can successfully meet the demands of our best science and avoid issues of internal coherence to our best total theory. But, first, the standard conception of Universalism has to go. In particular, Unstructured Composition and Compositional Egalitarianism have to go. In the next Section, I will show how to do this without thereby embracing doctrines in breach of the spirit of Universalism, e.g. restricted composition and ontological inegalitarianism *à la* McDaniel (2017), according to which there are "degrees of being" to the effect that, say, dogs and trees are, in some sense, more real than trogs and trout-turkeys. My view is rather that there are all sorts of wholes[29] but some wholes are *more natural than* others. This view makes use of a nonstandard conception of Lewisian naturalness for wholes that allows structure in composition (*Structured Composition*) and metaphysically meaningful different kinds of wholes (*Compositional Inegalitarianism*): robust/*natural wholes* and nonrobust/*unnatural wholes*. This move will fix Universalism's expressive inadequacy and will make it a better theory with new welcome advantages. First, though, we need new theoretical machinery.

---

[29]All the wholes are equally real for me. The metaphysical differences occur at the level of structure not of existence.

1.4 Steps Toward a Theory of Natural Objects, or Structured Universalism

In this section, I am going to present my solution to our predicament. The gist of the idea has already been presented: wholes are abundant[30] but some wholes (i.e. those recognized by our best science) are robust, hence *natural*, whereas others (i.e. all the gerrymandered, scattered, and undreamed of wholes) are nonrobust, hence *unnatural*. My view is, clearly, Lewisian but it should be said that it is not standard given its reliance on an *object-theoretic* rather than *property-theoretic* account of naturalness. In §1.4.1, I present the idea of natural properties. In §1.4.2, I introduce the idea of objectual naturalness and present my preferred version of universalism: *Structured Universalism* (SU). In §1.4.3, I present a formal framework for a (proto-)measurement theory of natural objects based on SU. In particular, *Natural Principles of Unity* (NPU), i.e. measure functions that map wholes to degrees of naturalness, will be discussed. Finally, after having spelled out the formal framework, in §1.4.4, I will provide, without any commitment, five SU models: the Fundamentalist SU model, the Gunky SU model, the Monist SU model, the Scientific SU model, and the Emergentist SU model. Each model will embody a different metaphysical picture of the material world and a different way of describing the interplay between naturalness, parthood, and composition.

Let me add that, in what follows, I have to offer no grand final theory, but

---

[30]With this I mean simply that for any *xx*, there is a whole composed out of the *xx*.

new foundations for Universalism in the vein of Leśniewski, Goodman, and Lewis, among others. Such new foundations are advanced with the hope of providing these Universalists with a flexible framework which, independently of the preferred metaphysics, allows for principled division among wholes based on how structured they are. Ultimately, my new foundations are steps toward a theory of natural wholes.

1.4.1 Natural Properties

In "New Work for a Theory of Universals" (1983), Lewis famously distinguishes between the *abundant* and the *sparse* conception of properties. According to the former, there is a property for *any* class[31] of things, no matter how miscellaneous and gerrymandered, whereas according to the latter, there are *just enough* properties to "carve nature at the joints"[32].

The abundant conception countenances gruesome properties such as BEING A TROUT-TURKEY, BEING GRUE[33], BEING A TROG, BEING NOT TOO DISTANT FROM A PINT OF BEER ON A BLUE MONDAY as well as nice properties such as BEING A DOG, BEING A KAZOO, HAVING QUANTUM FLAVOUR, and HAVING β-SHEET MOTIF[34]. The sparse conception, on the other hand, countenances only those properties that underpin facts about objective qualitative similarity, causality, laws of nature, and reference, among others[35]

---

[31]A class, for us, will be a set. No further distinctions are required.

[32]We will get clearer on this gloss below.

[33]Being grue $=_{df}$ Either green and observed before a certain time t or being blue and not observed after a certain time t. See Goodman (1954).

[34]This is a shape property of proteins.

[35]These properties could also underpin facts about intrinsicality, duplication, ampliative inference, and supervenience. Here, we do not have to go into these details, it would take us afield. But cf. Lewis (*ibid.*, 1984, 1986a, pp. 59ff) and Dorr and Hawthorne (2013) for a careful exposition.

such as BEING A DOG, BEING A KAZOO, HAVING QUANTUM FLAVOUR, and HAVING β-SHEET MOTIF.

Lewis identifies a property with any class of actual or possible things (cf. Lewis *ibid.*, 1986a, Section 1.5)[36]. For any way of carving up the logical space, there corresponds a given property[37]. This alone suffices for an abundant ontology of properties. After all, given Lewis's recipe, gruesomely gerrymandered and miscellaneous properties/classes are only to be expected – all the more so considering that Lewis wants properties for all the definable classes of the set-theoretical hierarchy, all the semantic values of all (actual and possible) predicates, all the contents of all (actual and possible) mental

---

[36]A clarification: the position according to which a property *is* its extension, i.e. the class of things that have the property, is known as *Class Nominalism* (CN). Lewis's version of CN, though, takes the extension of a property to comprise its actual as well as merely possible instances. So, strictly speaking, a property, for Lewis, is a class of possible objects (remember: the actual is possible, so actual objects are possible objects). This controversial move is part of Lewis's infamous *modal realism*, according to which all the possible worlds and the possible objects inhabiting them exist. But it serves the purpose of avoiding the problem of *coextensive properties*, i.e. properties having the same extension, that afflicts simple forms of CN. Take the properties BEING A CORDATE and BEING A RENATE. In simple CN, the first is the class of all the actual things with a heart, while the second is the class of all the actual things having kidneys. Despite the fact that these properties ascribe different attributes to the things that have them, in the actual world, their extensions are equal, i.e. their classes have the same members. So, since classes are extensional entities, the two classes are equal. Therefore, BEING A CORDATE and BEING A RENATE should be the same property. But this is clearly wrong. Lewisian CN rectifies this by adding merely possible instances to the properties' extensions. In other worlds, surely there are things having hearts but no kidneys and *vice versa*. So, the class of all actual and possible things having a heart and the class of all actual and possible things having kidneys do *not* have the same members anymore. Thus, BEING A CORDATE and BEING A RENATE are different properties, as we wanted. However, Lewisian CN seems ill-suited to address the problem of *necessarily coextensive* properties, that is properties that are coextensive in all possible worlds, e.g. BEING TRIANGULAR and BEING TRILATERAL. These properties seems in need of an *hyperintensional* treatment (see Nolan 2014). So, in the end, Lewisian CN seems wrong-headed. For more on CN and the issue of coextension see Busse (2016), Guigon (2015, pp. 135-155).

[37]This is, in effect, a generative principle for properties based on Class Nominalism analogous to the generative principle for wholes based on Unrestricted Composition. We will return on this analogy.

40

states, and so on.

But, in a famous passage, Lewis acknowledges that the abundant conception alone cannot work for all theoretical purposes (*ibid.*, p. 346):

> Because properties are so abundant, they are undiscriminating. Any two things share infinitely many properties, and fail to share infinitely many others. That is so whether the two things are perfect duplicates or utterly dissimilar. Thus properties do nothing to capture facts of resemblance. That is work more suited to the sparse [properties]. Likewise, properties do nothing to capture the causal powers of things. Almost all properties are causally irrelevant, and there is nothing to make the relevant ones stand out from the crowd. Properties carve reality at the joints – and everywhere else as well. If it's distinctions we want, too much structure is no better than none.

Because of this, Lewis proposes to adopt an abundant theory of properties supplemented by a theory of *naturalness* for properties, according to which there is an elite subclass of all the properties – the natural properties – doing the job of sparse properties[38].

Lewis conceives of naturalness as *objective*, *graded*, and *upper bounded*. That is, there are properties that are objectively *more* or *less natural than* other properties[39]. Presumably, HAVING β-SHEET MOTIF is more natural than BEING A KAZOO, which is more natural than BEING NOT TOO DISTANT

---

[38]Actually, the role of sparse properties, for Lewis is played just by the *perfectly* natural properties. See below. Sometimes, though, I will speak of natural properties to mean "perfectly natural properties", but when this happens, it will be contextually clear.

[39]Of course, there are also properties that are as natural as others.

41

FROM A PINT OF BEER ON A BLUE MONDAY – and, conversely, BEING NOT TOO DISTANT FROM A PINT OF BEER ON A BLUE MONDAY is less natural than BEING A KAZOO, which is less natural than HAVING β-SHEET MOTIF.

However, there is a maximum degree of naturalness for properties, i.e. *perfect naturalness*[40]. It is the perfectly natural properties that, for Lewis, play the role of sparse properties and, thus, really carve nature at the joints[41].

Indeed, this elite minority of all properties grounds objective similarities, carves out the causal powers, and provides a minimal supervenience base for all other properties (cf. Schaffer 2004, pp. 93ff). As such the perfectly natural properties are expected to characterize completely and without redundancies the intrinsic, qualitative profile of the world[42].

---

[40]Though, it is unclear whether naturalness should also have a minimum degree, hence be *lower bounded*, i.e. perfectly unnaturalness. Lewis does not say, but reaching a maximum limit of unnaturalness seems less pressing than reaching a maximum limit of naturalness. Of course, this holds in Lewisian models. There can be different metaphysical views. See the next Sections.

[41]Lewis thinks that the relative naturalness of a property – i.e. its being more or less natural than another property – can be given in terms of the perfectly natural properties. In particular, in terms of the definitional complexity of the predicates expressing it as follows: a property P is more natural than another property Q iff P has a less complex definition in terms of the perfectly natural properties than Q. Lewis does not say much about "definitional complexity", but it is usually taken to be a matter of definitional length (cf. Lewis 1986, p. 61). Accordingly, a definition employing e.g. a long sequence of disjunctions will increase complexity more than a definition employing e.g. a shorter sequence of conjunctions (cf. Sider 2011, p. 130, Dorr and Hawthorne 2013, p. 19ff). This proposal is controversial for two main reasons: first, some natural properties, under this constraint, will be given an infinitely long definition thus jeopardizing the spirit of the proposal (see Sider 1995); second, tying up naturalness to definitional complexity this way would, ultimately, make naturalness dependent on the preferred formation method for complex predicates and, thus, on pliable features of the language. A more straightforward strategy would be that of taking relative naturalness as our basic working notion, and define the perfectly natural properties as those properties such that nothing is below them in the relative naturalness order. For any two properties P and Q, either P is more natural than Q or Q is more natural than P or P is as natural as Q; P is perfectly natural iff there is no other property Q that is more natural than P.

[42]Indeed, Lewis holds the supervenience thesis known as *Humean Supervenience* (HS), according to which all there is to a world supervenes upon *local qualities*, i.e. perfectly natural properties. See Lewis (1994).

For worlds like ours, Lewis identifies the perfectly natural properties with the properties of the *fundamental* level of nature. That is, of the smallest particles of physics (e.g. quarks and leptons[43]), e.g. HAVING QUANTUM FLAVOUR, HAVING $\frac{1}{2}$ SPIN, HAVING POSITIVE CHARGE[44].

All the other properties supervene on these so as to reflect the hierarchy of nature, from the complex and larger to simplest and smallest: for instance, mental properties supervene on biological properties, which supervene on physico-chemical properties, which supervene on atomic properties[45], which supervene on microphysical properties (see Schaffer 2003a and Kim 2010, pp. 41-65).

Thus, for Lewis, sparseness dwells in fundamentality, and naturalness is drawn from it. An eloquent overview of this is provided by Lewis himself (1999, pp. 291ff):

---

[43]Hence, if all we know from current physics is correct, for Lewis, the bearers of perfectly natural properties are mereologically atomic, i.e. they lack proper parts. This well reflects a certain inclination on the part of Lewis towards "*Atomism*" or the view that everything is made up of mereological atoms. However, Lewis (1991) accepts the metaphysical possibility of non-actual *gunky worlds*, that is of non-actual worlds where everything has proper parts. This may be problematic for Lewis (see Borghini and Lando 2011).

[44]It should be said, though, that despite his preference for this characterization of perfectly natural properties and their bearers (remember his commitment to HS), Lewis considers the possibility that these elite properties are (also?) properties of quantum fields or of some other ether-like entity (see Lewis 1986a, p. 14, 1986bb, pp. ix-x,). He does not elaborate on this, but the question is not at all trivial. First, it is an open question whether things such as quantum fields have the sort of properties that would preserve Lewis's favourite view, rather than a completely different one, e.g. monism (cf. Schaffer 2010b). Second, as Borghini and Lando (2011) have convincingly argued, Lewis's own commitment to "size minimalism" about the bearers of perfectly natural properties seems unconvincing, and there seem to be good reasons to hold a more liberal view of such bearers' size, i.e. different size for different bearers in different worlds. Third, Lewis adheres to this view of perfect naturalness because of his physicalism, but, as we are going to show below, one may hold that naturalness is drawn from all levels of nature (Schaffer 2004) below.

[45]That is, properties of *physical* atoms, not mereological atoms. As we know, physical atoms have proper parts, i.e. subatomic particles, so do not qualify as mereological atoms.

This world, or any possible world, consists of things which instantiate fundamental properties and which, in pairs or triples or . . . , instantiate fundamental relations. Few properties are fundamental: the property of being a club or a tub or a pub, for instance, is an unnatural gerrymander, a condition satisfied by miscellaneous things in miscellaneous ways. A fundamental, or 'perfectly natural', property is the extreme opposite. Its instances share exactly some aspect of their intrinsic nature. [...] The whole truth about the world, including the mental part of the world, supervenes on this pattern. [...] It is a task of physics to provide an inventory of all the fundamental properties and relations that occur in the world. [...] We have no *a priori* guarantee of it, but we may reasonably think that present-day physics already goes a long way toward a complete and correct inventory. [...] We may further think that the very same fundamental properties and relations, governed by the very same laws, occur in the living and the dead parts of the world, and in the sentient and the insentient parts, and in the clever and the stupid parts. In short: if we optimistically extrapolate the triumph of physics hitherto, we may provisionally accept that all fundamental properties and relations that actually occur are physical.

But the Lewisian conception of sparseness/naturalness is not the only game in town. In fact, Schaffer (2004) offers an alternative and distinguishes the *fundamentalist* conception of Lewis from the *scientific* one he adheres to.

According to the scientific conception, the sparse properties are not drawn exclusively from the fundamental level of nature, but are drawn rather from *all* levels of nature. Therefore, for Schaffer, the properties underpinning objective qualitative similarities, causal powers, laws of nature, and so on, are not only those from microphysics but all "those invoked in the scientific understanding of the world" (*ibid.*, p. 92). In other words, those from *total science*.

Since no preference is accorded to any given level of nature, there seems to be *no* need for degrees of naturalness either. Indeed, as Schaffer says (*ibid.*, p. 93):

> On the scientific conception, the properties invoked by *total science* are ontologically on par. All carve out joints of nature. Muons, molecules, minds, and mountains are in every sense equally basic.

For Schaffer, then, a property is natural (*simpliciter*[46]) iff it is invoked in the scientific understanding of the world; otherwise, it is unnatural (*simpliciter*). Therefore, BEING A DOG, BEING A KAZOO, HAVING QUANTUM FLAVOUR, and HAVING β-SHEET MOTIF are all equally natural properties, whereas BEING A TROUT-TURKEY, BEING GRUE, BEING A TROG, BEING A KAZOO OR A PARTICLE NOT TOO DISTANT FROM A PINT OF BEER are all equally unnatural properties[47].

---

[46]In the context of Schafferian/scientific naturalness, I will drop the *simpliciter* qualification, unless specification is required.

[47]It must said that Schaffer does not say whether he thinks that unnatural properties follow the natural properties in being all equally non-basic. It seems to me, though, to be a plausible assumption. That said, an alternative reading would say that while all the

Both conceptions of naturalness are legitimate and we are not going to decide, here, which one is better, if any[48]. In fact, our present concern, in this Chapter, is not theory-choice, but theory-building. Thus, in order to develop our theory of natural objects and show how different metaphysics of material objects result from different conceptions of naturalness, we will need them both.

But first, we need a credible notion of "natural object" to work with. Our next Section is devoted to the elaboration of such a notion.

1.4.2 Natural Objects

Monocategorial vs Polycategorial Naturalness

I want to draw a distinction between *monocategorial* and *polycategorial* accounts of naturalness. A monocategorial account of naturalness holds that naturalness applies to the residents of just one ontological category, whereas a polycategorial account of naturalness holds that naturalness applies to the residents of more than one ontological category.

Traditionally, monocategorial naturalness has been the standard so much so that the main theoretical role of naturalness has been that of setting up distinctions among properties and nothing else. But the prospect of polycategorial naturalness should be considered seriously[49] given that there seems

---

properties invoked by our total science are equally natural, the more we move away from total science, the more unnatural a property gets. So, the egalitarian treatment is saved for natural properties only. Thanks to Aaron Cotnoir here.

[48]Though, in Chapter 3, I will endorse the scientific view, but with some qualification.

[49]Some Lewisians have advanced the idea that, besides physical properties (and relations), naturalness applies also to mathematical properties (and relations – cf. Bricker 2020). Such an account would be non-standard, for sure, but monocategorial nonetheless.

to be a felicitous case for a notion of naturalness applied to objects that sets up distinctions among them. The case I want to argue for is fairly simple[50]: as there are natural and unnatural properties, so there are natural and unnatural objects[51].

---

[50]That I take the idea to be simple is, of course, no indication that I take it to be *trivial*.

[51]An interesting case is that of Lewis (1983, pp. 48-49). There, Lewis seems to flirt with the idea of natural objects but embraces a sort of reductive attitude according to which naturalness for objects reduces to naturalness for properties – therefore, Lewis is a monocategorial naturalness theorist. Consider his words (*ibid.*, italics mine):

> Naturalness of properties makes for differences of eligibility *not only among the properties themselves*, but *also among things*. Compare Bruce with the cat-shaped chunk of miscellaneous and ever-changing matter that follows him around, always a few steps behind. The former is a highly eligible referent, the latter is not. [...] That is because Bruce, unlike the cat-shaped chunk, has a boundary well demarcated by differences in highly natural properties. Where Bruce ends, there the density of matter, the relative abundance of the chemical elements, . . . abruptly change. Not so for the chunk. Bruce is also much more of a locus of causal chains than is the chunk.[...] Thus naturalness of properties *sets up distinctions among things*.

It could be that Lewis holds such a position, in part, because he does not have a full-fledged working notion of "natural objects" to offer (cf. Dorr and Hawthorne 2013) and, in part, it could be because of his metaphysics of properties. We can motivate this as follows. Remember, first, that, for Lewis, properties *are* classes of objects. Thus, something has/instantiates a property such-and-such iff it is a member of the class of all the (actual and possible) objects that such-and-such: for instance, something is a kazoo (i.e. has the property of BEING A KAZOO) iff it is a member of the class of all the (actual and possible) kazoos. Take now the naturalness case. Suppose object x has the natural property ϕ, while that object y has the unnatural property ψ. We know this means that x goes into the "natural class" of all the (actual and possible) ϕ-ers, while that y goes into the "unnatural class" of all the (actual and possible) ψ-ers. The two classes are different, of course, since the class of the ϕ-ers is a class whose members are similar, grounds causal powers, and so on, whereas the class of the ψ-ers is a class whose members are scattered, miscellaneous, and gruesome. So, in a way, we could say that by locating x and y, respectively, into the class of the ϕ-ers and the class of the ψ-ers we have thereby divided them based on their nature and, in a way, set up a distinction among them – as the saying goes: you shall be judged by the company you keep. Perhaps, this is how Lewis thinks that "naturalness for properties sets up distinctions among things". But the proposal looks shaky to me. For one thing, the reduction of one sort of naturalness to another is a substantive commitment that has to be argued for, not taken for granted as Lewis does. I have reasons to believe that naturalness for properties and naturalness for objects are *prima facie* different (see the present Section). So, in absence of good reasons for thinking otherwise, I think a liberal attitude that accepts them both works better. Second, as we have seen before, Lewis relies crucially on controversial assumptions on the nature of properties. Third, the Lewisian proposal makes the nature of a thing implausibly *external* to the thing itself,

The first reason why a naturalness theorist should consider this is that a distinctive notion of naturalness for objects opens up space for a full-fledged theory of natural objects, and a theory of natural objects, in turn, opens up space for answering pressing questions regarding the metaphysical structure of objects, e.g. "Are the natural objects all and only the unified wholes?", "Can the structure of natural objects be ordered or measured?", "Is composition restricted to the natural objects?", and so on. Thus, the idea of naturalness for objects is in itself *prima facie* worth pursuing.

But it is also *prima facie* plausible. Indeed, despite the fact that naturalness for properties and naturalness for objects are both interested in discriminating between the natural, the sparse, the joint-carving on the one hand and the unnatural, the abundant, and the gerrymandered on the other, it seems to me that they do so by focusing on different features of properties and objects. In fact, naturalness for properties tracks down and ranks properties on the basis of, say, the making for qualitative similarity and their

---

while it should be *internal* to it. To see this, say that a relation is external iff it relates a thing with something outside of itself, while that it is internal iff it relates a thing only with itself (cf. the notions of intrinsic and extrinsic properties in Lewis 1983a, 1986a, pp. 61-63, 1998). The nature of a thing, as we understand it, is just "the way that thing itself, and nothing else, is" (Lewis 1983a, p. 197). So, presumably, when we say that an object is natural, we say something about the way that object and nothing else is: namely, that its internal structure is such-and-such. But, for Lewis, this cannot be given that an object counts as natural or as having naturalness only insofar as it belongs to *something else outside of it*: namely, the class of natural things. This makes the way a thing is – in our case, the way its internal structure is – always somehow indebted to something else. And this is implausible. A related worry seems to have been discussed also by Armstrong (1992, p. 16):

> [C]onsider the natural class consisting of all and only the objects having temperature *T*. Let *a* be a member of this class. What have the other members of this class ... to do with *a*'s temperature? After all there would appear to be a possible world where these other members do not exist, or where they exist but lack temperature *T*.

having a causal profile, while naturalness for objects tracks down and ranks objects on the basis of their internal structure. However, ranking properties for their degree of naturalness does not tell us *ipso facto* e.g. whether a natural object is a unified whole or whether composition should be restricted to all and only the natural objects – things that a theory of natural objects, instead, should address. So, even if the two notions are expected to cooperate – after all, a natural object has natural properties –, there is enough of a difference to require them both.

Moreover, naturalness for properties and naturalness for objects are not even equivalent in their "theoretical behavior". Indeed, naturalness for properties behaves as a second-order property, i.e. a *property of properties*, i.e. a property that properties have, while naturalness for objects behaves as a *property of objects*, i.e. a property objects have. This has at least two interesting consequences. First, there are meaningful questions regarding naturalness for properties that are not equally meaningful for the object case. For instance, while it seems perfectly reasonable to ask ourselves whether the property BEING PERFECTLY NATURAL is itself perfectly natural (see Thompson 2016), there seems to be no point in asking whether a perfectly natural object is itself perfectly natural. Second, naturalness for properties and naturalness for objects makes us think of a natural object in different ways. Indeed, naturalness for properties conceives of a natural object only as a bearer of a property that bears the naturalness property. In short, it is a "mere bearer" or a "mere carrier" for naturalness because it is not that which grounds naturalness. On the other hand, naturalness for objects conceives of a natural object as an object whose internal structure makes it natural. In

object-theoretic terms, a natural object is a "structured object", not a mere bearer, because it is that which grounds naturalness.

Given the above, I will accept a polycategorial account of naturalness and I will thus consider the appeal to a distinctive notion of naturalness for objects *prima facie* plausible. In what follows, I will offer an informal presentation of my theory of natural objects. Then, in the next Section, I will offer a formal framework for it.

Two Conceptions of Objects

Say that there are two conceptions of objects: the abundant and the sparse one. According to the abundant conception of objects, for any things xx whatsoever, there is a whole composed out of them, no matter how arbitrary, miscellaneous, and gerrymandered the xx are – of course, this is exactly what Unrestricted Composition says. According to the sparse conception of objects, on the other hand, there are just enough objects to "carve nature at its joints", that is to underpin facts of qualitative similarity, causal powers, laws of nature, and so on. This seems close to what our best science says.

Analogously to what Lewis says for properties, we accept an abundant ontology of objects for reasons of anti-arbitrariness, anti-vagueness, and anti-anthropocentrism concerns. But we complain of the abundant conception because it is far too undiscriminating to make some objects – i.e. the structurally robust or joint-carving ones – stand out from all the others – i.e. the structurally nonrobust or gerrymandered ones. Thus, I recommend adopting an abundant ontology of objects supplemented with a theory of naturalness for objects.

Accordingly, we argue that some objects – a subset of all the objects, in fact – are called *natural objects*, while all the others are *unnatural objects*. Natural objects have a robust structure and are nomologically relevant, in our sense, whereas unnatural objects have nonrobust structure and are nomologically irrelevant. Examples of the former are unified and lawful wholes such as quarks[52], sea-slugs, laptops, kazoos, proteins, human animals, chairs, and whatnot, while examples of the latter are, instead, scattered and unlawful wholes such as trout-turkeys, trogs, nosetowers, the object composed out of a sea-slug, Lincoln's hat, and my copy of Nietzsche's *Thus Spoke Zarathustra*, and so forth.

The distinction between natural and unnatural objects should be taken as primitive and objective, but not necessarily admitting of degrees. We want the general theory to be uncommitted as to whether the correct conception of naturalness should be the fundamentalist *à la* Lewis or the scientific one *à la* Schaffer. The theory, as we will see later, is designed to be flexible enough to accommodate enthusiasts of each (and more). So, for now, we forego this discussion.

Be as it may, our theory, even if barely outlined, has a few notable characteristics already. First of all, it is a *nonstandard* form of Universalism since it accepts Unrestricted Composition as its generative principles for wholes, but in contrast with the standard conception of Universalism, it makes structure relevant for wholes (Structured Composition) and it acknowledges metaphysically different kinds of wholes (Compositional Inegalitarianism): namely, natural and unnatural ones. I call this theory *Structured Universalism*:

---

[52]For objects with no proper parts I use "whole" in the improper mereological sense.

(SU) Any xx whatsoever compose a whole, but some wholes are natural, all the others, are unnatural.

Or in package form:

(Unrestricted Composition): Whenever there are some things xx, then there exists something composed out of them.

(Structured Composition): Structure matters in composition.

(Compositional Inegalitarianism): There are metaphysically different kinds of composites.

SU is an attractive, powerful, and elegant thesis. But it is also intuitive[53] – more intuitive than Standard Universalism – and fruitful because it can provide the ideal theoretical framework for various different metaphysics of material objects as well as offer interesting solutions to otherwise obnoxious conundrums for Universalism. (Thus, it is bewildering how little attention it has received in the literature[54]).

To fully appreciate this aspect of SU, though, and see how it can serve the purpose of articulating a full-fledged theory of natural objects, we have to put some "formal" flesh on the "informal" bones of SU. This is what we will take care of in the next Section.

---

[53]We understand this as the fact that SU flies in the face of common sense less than Standard Universalism does.

[54]Most certainly this is due to a lack of serious investigation into naturalness for objects. Though, see below.

1.4.3 The Formal Framework

In this section, we will be interested in assessing the formal machinery for our theory of natural objects. In particular, we will resort to mereology and some sort of naturalness-based measure functions we call *Natural Principles of Unity*. Once equipped with such machinery, we will adopt a theory-building spirit and discuss five different models for SU. The hope is to offer a strong as well as flexible framework for natural objects.

Mereology

We start by taking parthood "$\sqsubseteq$" as our primitive and define the following mereological notions:

(D1) $x \sqsubset y :\equiv x \sqsubseteq y \wedge x \neq y$

(D2) $x \circ y :\equiv \exists z(z \sqsubseteq x \wedge z \sqsubseteq y)$

(D3) $F_\varphi z :\equiv \forall x(\varphi x \rightarrow x \sqsubseteq z) \wedge \forall y(y \sqsubseteq z \rightarrow \exists x(\phi x \wedge y \circ x))$

(D4) $x \sqcup y := \iota z \forall w(w \circ z \leftrightarrow (w \circ x \vee w \circ y))$

(D5) $x \cdot y := \begin{cases} x \sqcup y \text{ but } \neg x \circ y \\[2mm] \text{undefined otherwise} \end{cases}$

D1 defines proper parthood (which is perhaps our intuitive idea of parthood, i.e. that of an object being a piece of another larger object); D2 defines overlap in terms of the sharing of parts; D3 defines the general fusion of the φ-ers as the thing that has all the φ-ers as parts and whose parts overlap

at least some φ-ers[55]. D4 defines a binary fusion of x and y as that thing which something overlaps iff it overlaps either x or y[56]; finally, D5, defines what we may call the *van Inwagen binary fusion* of x and y, i.e. a binary fusion of pairwise non-overlapping (i.e. disjoint) objects – this notion reflects van Inwagen's definition of "composition"[57] for the binary case, and it will turn out handy, among other things, to illustrate fusions of objects with no proper parts, e.g. subatomic particles, which share no common part.

Then, we assume classical mereology and axiomatize it in the style of Cotnoir and Varzi 2019).

(A1) $\forall x (x \sqsubseteq x)$

(A2) $\forall x \forall y ((x \sqsubseteq y \land y \sqsubseteq x) \to x = y)$

(A3) $\forall x \forall y \forall z ((x \sqsubseteq y \land y \sqsubseteq z) \to x \sqsubseteq z)$

(A4) $\forall x \forall y (\neg x \sqsubseteq y \to \exists z \forall w (w \sqsubseteq z \leftrightarrow (w \sqsubseteq x \land \neg w \circ y)))$

(A5) $\exists x \varphi x \to \exists z F_\varphi z$

A1–A3 are the usual *partial order* axioms, i.e. parthood is reflexive, anti-symmetric, and transitive. A4 is a "remainder principle", according to which whenever one thing fails to be part of another thing, there must be a "remainder" of the first when the second is removed. Finally, A5 tells us that if there are some ϕ-ers, then there there is a fusion thereof. A5 is, of course, the axiom of Unrestricted Composition.

---

[55]This definition of fusion is popular. Cotnoir and Varzi (2021, Ch. 5) call it a "Leśniewski fusion" and it can be found in Tarski (1929, 1935), van Inwagen (1987, 1990), Lewis (1991), and Van Cleve (2008).

[56]This notion of fusion will make our exposition easier in illustrative examples.

[57]See van Inwagen (1990, p. 29).

Natural Principles of Unity

I shall now define what I call *Natural Principles of Unity* (NPU). Roughly, these are "naturalness-based measurements for objects"[58] that, for any given object x tell us how natural, hence how robust and structured that x is.

Formally, NPU will denote measurement functions from the domain of objects X to degrees of naturalness X, i.e. $\mu : X \mapsto D$. Accordingly, for

---

[58]A clarification is due: unfortunately, I am not going to propose a full-fledged measurement theory for natural objects in the sense of a naturalness-based *Representational Theory of Measurement* (RTM). While this is certainly the final aim of the final theory, the task proved rather complicated and fraught with obstacles, especially due to the various conceptions of naturalness on the table. Indeed, while the fundamentalist/Lewisian conception seems liable of a proper RTM-style treatment, it is far less clear that the same goes for the scientific/Schafferian conception. Indeed, by following Lassiter (2017, Chapters 1 and 2), we could note that, for the fundamentalist/Lewisian theorist, the NPU provide "naturalness-based measures for objects" in the sense that when we map objects in X to degrees in D (i.e. $\mu : X \mapsto D$), we really map a *qualitative structure* such as $\langle X, \succeq_{NAT} \rangle$ to a *numerical structure* such as $\langle D, \geqslant \rangle$. The former represents an ordering on X provided by relative naturalness, while the latter is a scale or an ordered set of degrees. The ordering relation on X, i.e. "$\succeq_{NAT}$", represents e.g. the "at least as natural as" relation, and it is reflexive, transitive, but not antisymmetric – after all, if x and y are equally natural, they need not have to be identical. The ordering relation on D, instead, i.e. "$\geqslant$", is a connected and dense partial order defined on (some interval of) the reals $\mathbb{R}$. On the other hand, though, for the scientific/Schafferian theorist, the NPU provide a "measure" for objects from X only in the more general sense that it associates a natural object with a numerical value. There is no naturalness ordering defined on X since naturalness is, in Schafferian/scientific terms, an all-or-nothing matter. And there is no dense scale of degrees – in fact, we have only two numerical values for natural objects: 1 and 0. We could, in principle, simulate a bivalent treatment of naturalness by exploiting the same machinery we use for the fundamentalist/Lewisian conception of naturalness by "thresholding". That is, by defining a threshold "θ" on the scale that, in turn, defines a parameter – i.e. the parameter of total science in this case – and such that all the objects that meet or exceed θ are all and only the natural objects, while all the objects that are below θ are all and only the unnatural objects. This is tempting, but thresholding presupposes (i) that θ can be contextually manipulated so as to accommodate different contexts of use and (ii) that naturalness is *in principle* gradable. And this is not good for Schafferian naturalness. So, all in all, it is not very clear to me whether we can provide a uniform RTM-style treatment for both Lewisian as well as Schafferian natural objects. Despite this, natural objects *can* be measured somehow and we can provide some measure-theoretic treatment of natural objects. So, for now, instead of a full-fledged naturalness-based RTM, I am going to offer a more modest "proto-measurement theory of natural objects" or, if you want, a "quasi-measurement of natural objects". I am convinced this will be theoretically interesting and well-placed enough to let us make significant progress with our analysis.

any object $x \in X$ and degree $d \in D$, NPU will have the following form: $\mu(x_i) = d_i$ (for $1 \leqslant i \leqslant n$).

Depending on whether we are fundamentalist/Lewisian about naturalness or rather scientific/Schafferian, for D, we will make use of (some interval of) the real numbers $\mathbb{R}$ or of (the set $\{0, 1\}$ of) the natural numbers $\mathbb{N}$[59]. Hence, depending on the conception of naturalness we adopt, our NPU-mappings will differ in character.

Indeed, the fundamentalist or Lewisian naturalness theorist wants *gradable* and *upper* (*lower?*) bounded naturalness. Thus, we could take the interval $[0, 1]$ of $\mathbb{R}$ for D and say that fundamentalist or Lewisian NPU-mappings map any x from X to d from D as follows:

$$\mu(x) := \begin{cases} 1 \text{ iff } x \text{ is a perfectly natural object} \\ 0 \text{ iff } x \text{ is a perfectly unnatural object} \\ n \ (0 < n < 1) \text{ iff } x \text{ is a less than perfectly natural object} \end{cases}$$

In other words, in a fundamentalist/Lewisian setting, perfectly natural objects measure 1; perfectly unnatural objects measure 0; and less than perfectly natural objects measure n for some n between 0 and 1 – then, of course, if x is closer to 1 than to 0, it will be a relatively or even highly natural object, whereas if x is closer to 0 than to 1, it will be relatively or even highly unnatural object.

We should further note that while the Lewisian demands an upper bound on naturalness for there is a maximum degree of naturalness, it is far less clear

---

[59] See below for more on this. In general, though, we will adapt our mathematical choices to our metaphysical needs.

that there should be a lower bound on naturalness. Then, if we are Lewisians but also persuaded that there are no objects whose naturalness measure is exactly 0 – perhaps because we think that any object no matter how far from perfect naturalness is has non-zero value[60] –, we could take the half-closed the half-open interval $(0, 1]$ for D and redefine our say fundamentalist or Lewisian NPU-mappings as follows:

$$\mu(x) := \begin{cases} 1 \text{ iff } x \text{ is a perfectly natural object} \\ n \ (0 < n < 1) \text{ iff } x \text{ is a less than perfectly natural object} \end{cases}$$

In this case, apart from the perfectly natural objects, that is natural objects whose measure is 1, we have less than perfectly natural objects. These objects can be more or less unnatural but never perfectly unnatural. However, we could still say that the value of 0 is a *limit* for the measuring function $\mu(x)$ such that as x gets closer to gruesome unnaturalness, $\mu(x)$ gets closer and closer to 0. So, there are gruesomely unnatural objects, that is natural objects whose measure is very close to 0, but there are no perfectly unnatural objects.

On the other hand, the scientific or Schafferian naturalness theorist wants *non-gradable* naturalness. Thus, we could take the set $0, 1$ of the natural numbers $\mathbb{N}$ for D and say that scientific or Schafferian NPU-mappings map any x from X to d from D[61] as follows:

---

[60]Perhaps, one could take measure 0 to correspond to no structure at all. But one may want to draw a difference between no structure and unnatural structure. Accordingly, one may want to say that the unnaturalness measure of the most unnatural objects is more than 0.

[61]Of course, in this case, talking of "degrees" is improper for there are no real degrees. A Schafferian natural object is natural *simpliciter* or unnatural *simpliciter*. But it is handy to talk in terms of degrees, so we will continue to do so. If you want, we could consider these degrees "degenerate degrees".

$$\mu(x) := \begin{cases} 1 \text{ iff } x \text{ is a natural object } \textit{simpliciter} \\ \\ 0 \text{ iff } x \text{ is an unnatural object } \textit{simpliciter} \end{cases}$$

In the Schafferian case, natural objects all have a naturalness measure of 1, while unnatural objects all have a naturalness measure of 0. As we know, the gist of the scientific conception of naturalness is that the divide between natural and unnatural objects is provided by total science. Say, then, that the set of all objects X can be exhaustively partitioned into X^+, i.e. the subset of X that contains all and only the objects from the sciences, and X^-, i.e. the subset of X that contains all and only the objects that are "nomologically otiose"[62]. Then, we have that $\mu(x) = 1$ iff $x^+ \in X^+$, or that $\mu(x) = 0$ iff $x^- \in X^-$.

This seems the most obvious reading of Schaffer (2004), but we could offer also an alternative reading of it. Indeed, one could say that total science sets a parameter for objects. Those objects that meet it are all equally natural, those that fail to meet it can be more or less unnatural. The farther these get from total science, the more unnatural they become[63].

If we find this way of thinking persuasive, then we could modify our assumptions by taking the interval $[0, 1]$ of $\mathbb{R}$ for D and by mapping any x from X to $[0, 1]$ as follows:

---

[62]The expression comes from Brown (2016).

[63]The spatial metaphor should be understood in terms of nomological relevance and structural nonrobustness. So, the more structurally nonrobust and nomologically otiose an object gets, the more it conflicts with total science, hence the more unnatural it gets.

$$\mu(x) := \begin{cases} 1 \text{ iff } x \text{ is a natural object } \textit{simpliciter} \\ 0 \text{ iff } x \text{ is a perfectly unnatural object} \\ n \ (0 < n < 1) \text{ iff } x \text{ is a less than perfectly unnatural object} \end{cases}$$

Under this alternative Schafferian NPU, natural objects – i.e. the objects from total science – all get a naturalness measure of 1, while unnatural objects can get unnaturalness measures of n for $(0 \leq n < 1)$, depending on how structurally nonrobust and nomologically otiose they are.

This completes our discussion of the formal machinery. It is now time to apply it and see how it helps model our preferred metaphysics of natural objects. We will pay attention not only at the resulting "big picture", but also at the differing interplay between parthood, naturalness, and composition. Before, though, I would like to briefly touch upon Joshua D. K. Brown's thesis of *Natural Composition* (NC), which shares a lot of important common points with our SU.

Brown's *Natural Composition*

Previously, I said that a theory such as SU has received surprisingly little attention in the literature. This is certainly true, but it is also true that there is an important exception: namely, Brown's thesis of *Natural Composition* (NC) (2016). Now that we have more theories to compare, it could be beneficial to see how SU and NC relate.

According to Brown, in general, objects are always natural to a certain degree n. Objects with degree n for $n > 0$ are natural, whereas objects with degree n for $n = 0$ are perfectly unnatural. Then, NC holds that there are

all sorts of objects but that the relevant ones are all and only those whose n-degree of naturalness is $n > 0$; all the others, have n-degree of naturalness $n = 0$.

For Brown, the natural objects are those objects that are sufficiently unified and nomologically relevant, while the unnatural objects are disunified and, as he says, "nomologically otiose".

Quite obviously, NC comes very close to SU and *vice versa*[64]. In fact, I have no qualms in stating that NC and SU share a kindred spirit.

However, there are differences. NC and SU are not mere notation variants of one and the same theory. Indeed, Brown – as he himself acknowledges – offers no rationale for extending naturalness to objects, while I did; leaves the idea of ranking natural objects by measuring their naturalness degrees sketched, while I have offered a more thorough, formal treatment[65]; does not really address how parthood, composition, and naturalness interplay, while I will do in presenting SU models; and accepts the ontological innocence of unnatural objects, while I do not.

The latter is a particularly important point. According to Brown, the unnatural objects are so irrelevant to be an "ontological free lunch" (Armstrong 1997, p. 12). Indeed, he says (*ibid.*, p. 267):

> There is no substantive metaphysical distinction between there
> being a perfectly non-natural object and there simply being no

---

[64]At this point, it should be better for me to say that the two theories have been developed in complete autonomy. In fact, I discovered NC long after I developed SU.

[65]In fact, Brown does not discuss how the assignments of naturalness degrees should work. He limits himself to the bare assignment of a degree 1 of naturalness for perfectly natural objects, non-zero positive degrees of naturalness for relatively natural objects, and a zero degree of naturalness for perfectly unnatural objects.

object at all. [...] On [NC], perfectly non-natural composites are ontologically innocent. Once we posit the perfectly natural objects, accepting the perfectly non-natural composites is costless, or nearly so: they have only perfectly non-natural properties and are nomologically and causally otiose. [...] Other composites – composites that are at least minimally natural – on the other hand, are ontologically guilty, as they carry the cost of positing real metaphysical structure in the world in the form of natural properties and laws.

The passage reveals clearly why Brown thinks of NC more in terms of Restrictivism about composition than in terms of Universalism: composition is *de facto* restricted to the natural objects since only the natural objects posit "real metaphysical structure in the world in the form of natural properties and laws".

Brown justifies his position by invoking Hawley's account of *leveling-down ontological innocence* (Hawley 2014), according to which even if composition is unrestricted and there are lots of weird mereological wholes, these wholes do not add explanatory complexity. Consider her words (*ibid.*, pp. 84-86):

If we can understand why turkeys are always located where their parts are, then we can understand why the same holds for trout-turkeys. And so on. So although unrestricted composition commits us to lots of extra entities, it does not require any additional explanatory complications in order to explain how those entities behave, and how they relate to their parts. [...] The behaviour of

trout-turkeys, cat-fusions and other arbitrary sums is correlated

with the behaviour of more familiar objects in predictable ways.

Going into all the details would take us too far afield, but I will say that I do not think the levelling-down strategy succeeds once we have an abundant theory of natural objects.

Indeed, once we accept that objects can be natural or unnatural, depending on whether they exhibit or lack some sort of structural robustness and nomological relevance, it seems to me that it is not always the case that the behaviour of weird mereological wholes is correlated with that of familiar "in predictable ways". After all, explaining why trout and turkeys enter into causal processes such as perception does not tell us, predictably, why trout-turkeys seemingly do not, despite the fact that they are located where trout and turkeys are. Or, explaining why trout and turkeys are suitable to play some explanatory roles in our best science does not tell us, predictably, why trout-turkeys seemingly do not. In fact, we have resorted to a specific notion of naturalness for objects precisely to explain these facts. So, some explanatory complexity has been added to the theory.

Thus, for me, unnatural objects are not ontologically innocent in any way. They are structurally nonrobust, nomologically otiose, and certainly a bad fit for ordinary and scientific thinking. But still, they carry the cost of positing some metaphysical structure in the world, even if unnatural one.

All in all, NC and SU share a kindred spirit, some bedrock intuitions, and even some theoretical choice. But they are also set apart by key details regarding the framework and the conception of unnatural objects. That said,

I consider NC a remarkable alternative or, if you want, a forerunner of SU.

1.4.4 Models for SU

The Fundamentalist SU Model

Let us discuss the Standard Fundamentalist or Lewisian model of SU. In the world we want to model the following package of theses is true[66]:

(Parts Priority): The existence of parts is metaphysically prior[67] to the existence of the wholes they compose.

(Wellfoundedness): The metaphysical priority relation is well-founded; there can be no infinite regress of priority.

In our model, metaphysical priority tracks the mereological structure of the world from the larger to the smaller. In other words, the priority ordering tracks proper parthood. However, since there can be no infinite descending chains of metaphysical priority, there can be no infinite descending chains of proper parthood. In fact, every such chain terminates in mereological atoms, i.e. objects with no proper parts.

Traditionally, this package of theses has substantiated the hierarchical view according to which the most fundamental objects there are are the smallest objects of physics, i.e. subatomic particles such as quarks and leptons. They are metaphysically prior to everything they compose and there

---

[66]Here, I am mostly following Cotnoir (2013). But see also Tahko (2018).

[67]Metaphysical priority is an asymmetric relation, i.e. if x is metaphysically prior to y, then y is not metaphysically prior to x. In fact, it is *metaphysically posterior* to it. Intuitively, if x is metaphysically prior to y, it is more fundamental than y – and if y is metaphysically posterior to x, it is less fundamental than x. Given our present concerns, this is enough.

is nothing else which is metaphysically prior to them[68]. Accordingly, say, quarks and leptons are prior to the molecules they compose, which are prior to the cells they compose, which are prior to the dogs and trees they compose, which are prior to the trogs they compose, and so on.

A natural objects theorist may find this metaphysics persuading. Then, an obvious way for them to model it in naturalness-theoretic terms would be allowing the NPU to track the priority ordering, which, in turn, tracks proper parthood.

We start by taking assignments of objects from X to numbers from the unit interval $[0, 1]$ of the reals $\mathbb{R}$ (i.e. our scale of degrees D).

$$\mu : X \to [0, 1] \text{ s.t. for any } x \in X:$$

$$\mu(x) := \begin{cases} 1 \text{ iff } x \text{ is a perfectly natural object} \\ 0 \text{ iff } x \text{ is a perfectly unnatural object} \\ n \ (0 < n < 1) \text{ iff } x \text{ is a less than perfectly natural object} \end{cases}$$

Accordingly, we say that the natural objects having measure 1 – i.e. the perfectly natural objects – are the most fundamental objects there are, i.e. mereological atoms such as quarks and leptons; that the natural objects having measure is 0[69] – i.e. the perfectly unnatural objects – are the most

---

[68]Except, of course, for themselves which they compose improperly. But here I am referring to everything quarks and leptons "compose *properly*".

[69]The naturalness ordering we are working with is *fully closed* in the sense that it is bounded both from above and from below. In fact, we have a maximum and a minimum level of natural objects: namely, perfectly natural and perfectly unnatural objects. As we have already said, the notion of "perfectly unnatural object" may be a bit elusive and, perhaps, undesirable for theoretical reasons. Perhaps, we want to say that perfect unnaturalness is never achieved. In that case, we can easily change the NPU and use the idea of 0 as a limit.

gruesomely complex objects there are[70]; and that the natural objects having measure n for some $n \in [0, 1]$ such that $(0 < n < 1)$ – i.e. the less than perfectly natural objects – are kazoos, dogs, trees, cells, protons, trout-turkeys, trogs, nosetowers, ..., and so forth.

Given the priority ordering we want to track, the value of n should get smaller the further away we move from the objects whose measure is 1[71]. For instance, the protons that quarks and leptons compose will have measure 0.9; the molecules that protons compose will have measure 0.8; the cells that molecules compose will have measure 0.7; the dogs and trees molecules compose will have measure 0.5; the trogs dogs and trees compose will have measure 0.4; and so on[72].

This seems the right result. The NPU track the priority ordering as we would expect. We have descending chains of increasing naturalness. Thus, as we go from the larger to the smaller, we get objects that are increasingly more natural. However, there is no infinite regress on naturalness since the naturalness ordering terminates in a level of perfectly natural objects, i.e. mereological atoms, i.e. subatomic particles such as quarks and leptons.

---

[70]Examples are hard to come by. But this is only to be expected since the depths of gruesomeness are supposed to be unheard of and undreamed of by anyone (cf. Sider 2007).

[71]A nice way to write this down is in terms of the usual distance function $d(x, y)$ defined on the real number line (i.e. the geometrical representation of the real numbers): given any two points x and y, $d(x, y) = |x - y|$. In our case, once we have fixed the endpoints 0 and 1 – the minimum and maximum levels of natural objects –, we can ask ourselves how distant is n from either 0 or 1, i.e. $d(n, 0) = |n - 0|$ or $d(n, 1) = |n - 1|$. The distance between n and 0 or that between n and 1 represents whether the degree of naturalness of an object increases or decreases. In particular, as the distance between n and 1 increases (i.e. $d(n, 1) > 0$), the value of n, i.e. the degree of naturalness, decreases; conversely, that as the distance between n and 1 decreases (i.e. $d(n, 1) < 1$), the value of n, i.e. the degree of naturalness, increases.

[72]This is just a toy-ranking. So, it should be taken with a pinch of salt. The general idea, though, should be clear enough.

Regarding more specifically the interplay between parthood, composition, and naturalness, it should be noted that, in the present model, proper parts are metaphysically prior to the whole they compose. So, proper parts are *more natural than* the whole they compose.

We could formulate two principles connecting parthood, composition, and naturalness as follows:

(Natural Parts Priority): If $x \sqsubset y$, then $\mu(x) > \mu(y)$

(Natural Pseudo-Subadditivity[73]): $\mu(x) + \mu(y) > \mu(x \cdot y)$

Natural Parts Priority says that if x is a proper part of y, then x is more natural than y. That is, proper parthood tracks naturalness. Arguably, this is exactly what the fundamentalist wants: a nucleus is more natural than a cell, an engine is more natural than a car, a quark is more natural, a dog is more natural than a trog, a brick is more natural than a wall, and so forth[74].

Natural Pseudo-Subadditivity is less straightforward. It says that the naturalness measure of a whole is never greater than or equal to the sum of its proper parts' individual naturalness measures. In fact, it is always *less*[75].

This principle too should be plausible for our fundamentalists. After all, suppose that z is a pairwise disjoint fusion of x and y, e.g. a mini-wall of two

---

[73]I call this "pseudo-subadditivity" because subadditivity, strictly speaking, should be $\mu(x) + \mu(y) \geq \mu(x \cdot y)$. But we do not allow for the case in which $\mu(x \cdot y) = \mu(x) + \mu(y)$ since that would not be acceptable. See below.

[74]Admittedly, certain principles could be problematic for the principle. Suppose we believe in *arbitrary undetached parts* such as me minus one hair. Then, me minus one hair is a proper part of me. But arguably, it seems that I am more natural than my arbitrary undetached part. This is true and it would be worth further discussion in future research. For now, we ignore the issue and say that arbitrary undetached parts are controversial and can be resisted. Cf. van Inwagen (1981), Olson (1995), Johansson (2006, 2008), Varzi (2013).

[75]If you want, it is a sort of inverse of the famous Aristotelian dictum: a whole is never greater than the sum of its parts – though, in a very peculiar sense.

bricks or a hadron[76]. If z's naturalness measure were greater than, or equal to, the sum of x and y's individual naturalness measures, then in no way x and y would be more natural than – and metaphysical prior to – z. It seems that the Natural Parts Priority principle would be violated. We want the wall or the hadron to be strictly less natural than the bricks or the quarks they comprise. So the sum of their individual naturalness measures should be greater than that of their whole.

All in all, we have shown how a natural objects theorist can embed the fundamentalist picture of the world into their own framework and develop a fundamentalist theory of natural objects.

The Gunky SU Model

A different fundamentalist model of SU withholds Wellfoundedness, while accepting Parts Priority:

(Parts Priority): The existence of parts is metaphysically prior to the existence of the wholes they compose.

(Non-Wellfoundedness): The metaphysical priority relation is non-wellfounded; there can be infinite regress of priority.

In this model, metaphysical priority tracks the mereological structure of the world from the larger and complex to the smaller and simpler. However, since there can be infinite descending chains of metaphysical priority, there

---

[76]Hadrons are subatomic particles composed out of two or more quarks. In this case, our hadron is made up of just two quarks.

can be infinite descending chains of proper parthood. In fact, every such chain is infinite: there are proper parts all the way down.

Worlds exhibiting this sort of structure are called *gunky* since they are made up of so-called "atomless gunk" (Lewis 1991, p. 20). In these worlds, nothing has no proper parts. Quarks, if there are any, have proper parts, and those proper parts have further proper parts, and so on *ad infinitum.*

Gunky worlds are allowed by classical mereology (cf. Cotnoir 2013, Tarski 1956) and are metaphysically possible (cf. Sider 1993, Schaffer 2003a, 2010a, §2.4, and Zimmerman 1996). Thus, whether or not *our* world is gunky[77], a natural objects theorist may want to know how to model a gunky world.

If naturalness tracks the non-wellfounded priority ordering, then, in a gunky SU model, we have infinite descending chains of increasingly more natural objects.

In this case, we need a different NPU. Indeed, we should map objects from X to numbers in the interval $[0, +\infty]$ of the reals $\mathbb{R}$, rather than in the unit interval $[0, 1]$ so as to allow infinite descent of increasingly natural objects.

$$\mu : X \to [0, +\infty) \text{ s.t. for any } x \in X:$$

$$\mu(x) := \begin{cases} 0 \text{ iff } x \text{ is a perfectly unnatural object} \\ n \ (n > 0) \text{ iff } x \text{ is a less than perfectly unnatural object} \end{cases}$$

Accordingly, we have a base of perfectly unnatural objects, that is, the most gerrymandered and scattered. The naturalness measure of these objects is

---

[77]In Schaffer (2010a, §2.4), there is also discussion of the scientific seriousness of gunk. If serious scientific hypotheses allow for gunky explanations of our world, then the *actuality* of gunk should be considered all but exotic.

0. Then, for each $n > 0$, each object gets progressively more and more natural. As we approach $+\infty$, we get asymptotically closer to reaching perfectly natural objects.

We could also formulate principles connecting parthood, composition, and naturalness as before:

(Natural Parts Priority): If $x \sqsubset y$, then $\mu(x) > \mu(y)$

(Natural Pseudo-Subadditivity): $\mu(x) + \mu(y) > \mu(x \cdot y)$

After all, even if there are proper parts all the way down, proper parts are going to be more natural than the wholes they compose all the way down. And the wholes are going to be less natural than their parts all the way down[78].

The Monist SU Model

We now consider still another fundamentalist SU model. This time, we drop Parts Priority and advance the following package:

---

[78]A clarification. Some maintain that there are not only gunky worlds, but also *junky* and, maybe, *hunky* worlds (see Bøhn 2009, Giberman 2020). Junky worlds are worlds where everything is a proper part, whereas hunky worlds are worlds that are both gunky and junky. Whether these sorts of worlds are viable for an SU natural objects theorist is up for future work to decide. But there are reasons to be cautious, if not skeptical about it. First, both junky and hunky worlds violate classical mereology, which guarantees the existence of a maximal fusion, i.e. the *universe* (cf. Cotnoir and Varzi 2021, pp. 27-28). Second, note that, in junky worlds, there are infinite ascending chains of proper parthood, which, for us, would presumably mean that there are infinite ascending chains of increasingly more natural objects. But, then, it is not at all clear to me that naturalness should track the junky ordering. After all, it seems that junk makes the world more complex and gerrymandered. In other words, it increases unnaturalness, rather than naturalness. Regarding hunky worlds, instead, it is unclear whether there is any meaningful sense in which naturalness could track parthood. After all, in hunky worlds, there should be *both* infinite ascending chains of increasingly more natural objects *and* infinite descending chains of increasingly more natural objects. Even at first glance, it seems that hunky worlds are not available for an SU natural objects theorist.

(Wholes Priority): The existence of wholes is metaphysically prior to the existence of the parts they comprise.

(Wellfoundedness): The metaphysical priority relation is well-founded; there can be no infinite regress of priority.

Here, metaphysical priority tracks the mereological structure of the world from the smaller to the larger. Hence, the priority ordering tracks the inverse of proper parthood, i.e. *proper extension*. However, since there can be no infinite ascending chains of metaphysical priority, there can be no infinite ascending chains of proper extension. In fact, every such chain terminates in a *universal object*, i.e. something of which everything is part but that is no part of anything else[79].

The most prominent defender of the view we are outlining is Schaffer (2009, 2010a, 2010b, 2012, 2013) who calls it *Priority Monism*[80] (PM). According to PM, the most fundamental object there is is the *cosmos* or the *world* itself[81]. It is metaphysically prior to everything else, and nothing is metaphysically prior to it. Accordingly, say, the world is prior to the living organisms it comprises, which are prior to the limbs and organs they comprise, which are prior to the cells they comprise, which are prior to the quarks

---

[79]Note that a "universal object" is guaranteed to exist in classical mereology.

[80]In what follows, I am going to present PM as the thesis that Wholes Priority and Well-Foundedness both hold. It is not necessarily the form of PM that Schaffer endorses word for word. In fact, Schaffer relies also on the notion of "grounding", which I am not interested in discussing here. I want to keep our discussion as neutral as possible.

[81]Schaffer argues that PM is justified, among other things, by quantum mechanics. The idea is that the whole world is in a *quantum entangled state* that makes it a holistic quantum unity of non-separable quantum states (i.e. the quantum states of its parts). If so, presumably, the whole has intrinsic properties that are irreducible with respect to the intrinsic properties of its parts. See Calosi (2014, 2018), Maudlin (1998), and Schaffer (2010a, 2010b).

and leptons they comprise.

Now, the natural objects theorist interested in embedding PM into their own framework may initially have some troubles. Indeed, even if it may sound plausible to conceive of the cosmos as the most natural object or of the living organism as more natural than its cells[82], it is not at all obvious that it is plausible to conceive of trout-turkeys and trogs as more natural than trout, turkeys, dogs, and trees. But it should be so, given Whole Priority. Hence, a hasty application of fundamentalist NPU – though in reverse – would be unwise.

The solution may come from Schaffer himself (2009, p. 374) when he says that natural and unnatural objects obey different priority orderings. In particular, Schaffer argues that Wholes Priority is true *only of* natural wholes, whereas that Parts Priority is true *only of* unnatural objects. The reason would be that only natural wholes are robust enough to display that "organic unity" that makes them metaphysically prior to their parts. On the other hand, unnatural wholes are nonrobust enough to display no such unity and, thus, are metaphysically posterior to their parts. Therefore, while the cosmos or the living organism are, in effect, more natural than their parts, trout-turkeys and trogs are not.

---

[82]Consider the words of Hegel (1975, pp. 191-192):

> The relation of whole and parts, being the immediate relation, comes easy to reflective understanding: and for that reason it often satisfies when the question really turns on profounder ties. The limbs and organs for instance, of an organic body are not merely parts of it: it is only in their unity that they are what they are, and they are unquestionably affected by that unity, as they also in turn affect it. These limbs and organs become mere parts, only when they pass under the hands of an anatomist, whose occupation be it remembered, is not with the living body but with the corpse.

With this clarification in place, I propose a differential treatment of the natural objects. We take one sort of NPU to assign objects from X^+, i.e. the subset of X containing all and only the natural wholes, to $[0, 1]$, whereas another sort of NPU to assign objects from X^-, i.e. the subset of X containing all and only the unnatural wholes, to $[0, 1]$. This will better accommodate our monistic needs.

$$\mu : X^+ \rightarrow [0, 1] \text{ s.t. for any } x^+ \in X^+:$$

$$\mu(x^+) := \begin{cases} 1 \text{ iff } x^+ \text{ is a perfectly natural object} \\ n \ (0 < n < 1) \text{ iff } x^+ \text{ is a less than perfectly natural object} \\ 0 \text{ iff } x^+ \text{ is a minimally natural object} \end{cases}$$

$$\mu : X^- \rightarrow [0, 1] \text{ s.t. for any } x^- \in X^-:$$

$$\mu(x^-) := \begin{cases} 1 \text{ iff } x^- \text{ is a perfectly unnatural object} \\ n \ (0 < n < 1) \text{ iff } x^- \text{ is a less than perfectly unnatural object} \\ 0 \text{ iff } x^- \text{ is a minimally unnatural object} \end{cases}$$

The idea, here, representing the monistic hierarchy as broadly divided in two ontological regions: the natural and the unnatural ones. Accordingly, we use the first kind of NPU mappings to rank natural objects based on their degree of naturalness, while the second kind of NPU mappings to rank unnatural objects based on their degree of unnaturalness.

Among the natural objects, we have those with a naturalness measure of 1, i.e. the perfectly natural objects, i.e. in effect, just the cosmos; those with a naturalness measure of 0, i.e. the minimally natural objects, i.e.

the "Democritean base"[83] of mereological atoms, i.e. quarks and leptons; and those with naturalness measure in between, i.e. the less than perfectly natural objects, e.g. tables, chairs, kazoos, dogs, trees, and whatnot.

This seems right considering that natural objects are ordered according to Wholes Priority. Hence, as the biggest natural objects has the highest natural measure, so the smallest – the Democritean base of mereological atoms – has the lowest naturalness measure.

On the other hand, among the unnatural objects, we have those with unnaturalness measure of 1, i.e. the perfectly unnatural objects, e.g. the utterly gruesome objects; those with unnaturalness measure of 0, i.e. the minimally unnatural objects, e.g. a dog plus half-atom of a tree; and those with unnaturalness measure in between, i.e. the less than perfectly unnatural objects, e.g. trogs, trout-turkeys, nosetowers, and whatnot.

Note that this seems right too considering that unnatural objects are ordered according to Parts Priority. Hence, the parts of an unnatural whole are prior to the whole they compose. That is, they are more natural/less unnatural than the whole they compose.

At this point, we should be able to advance some principles connecting parthood, composition, and naturalness in this SU monistic model.

(Natural Wholes Priority): If $x^+ \sqsubset y^+$, then $\mu(x^+) < \mu(y^+)$

(Natural Pseudo-Superadditivity[84]): $\mu(x^+) + \mu(y^+) < \mu(x^+ \cdot y^+)$

---

[83]This evocative phrase is due to Schaffer (2010a, p. 53). Of course, the reference is to the atoms of Democritus which, supposedly, should be mereologically simple.

[84]As before, I call this "pseudo-superadditivity" because superadditivity, strictly speaking, should be $\mu(x) + \mu(y) \leq \mu(x + y)$. But we do not allow for $\mu(x) + \mu(y) = \mu(x + y)$ since, for us, a genuine natural whole can never be as natural as the parts it comprises.

(Unnatural Parts Priority): If $x^- \sqsubset y^-$, then $\mu(x^-) > \mu(y^-)$

(Unnatural Pseudo-Subadditivity): $\mu(x^-) + \mu(y^-) > \mu(x^- \cdot y^-)$

The first two principles are those holding in the natural region of the cosmos, whereas the last two are those holding in the unnatural region of the cosmos.

In particular, according to Natural Wholes Priority, we have that whenever x is a proper part of y, y is more natural than x. So, it is not proper parthood, but proper extension to track naturalness, as expected. Natural Pseudo-Superadditivity, instead, says that the naturalness measure of a (pairwise disjoint) fusion is greater than the sum of the individual naturalness measures of its fusees. Again, the principle may be not straightforward at first, but in effect it gives a plausible result to the monist. By Natural Wholes Priority, wholes are always more natural to the parts they comprise. But then, we would not want the naturalness measure of the whole to add up to – let alone to be less than – that of its parts. It must always be greater.

The other two principles, Unnatural Parts Priority and Unnatural Pseudo-Subadditivity, work as their fundamentalist counterparts we analyzed before. The only main difference is that, in this model, such principles hold only for unnatural objects.

All things considered, there seems to me to be an interesting pathway to monism for a naturalness theorist. The model we have discussed could prove to be the way to go for a monist theory of natural objects.

The Scientific SU Model

Another SU model would take the Schafferian or scientific conception of naturalness at its core. That is, it would accept that the objects of our total science are equally natural. Consider again Schaffer (2004, p. 93):

> On the scientific conception, the [objects] invoked by *total science* are ontologically on par. All carve out joints of nature. Muons, molecules, minds, and mountains are in every sense equally basic.

In this model, there are no priority orderings among natural objects. If an object is invoked by total science, then it is natural *simpliciter*. Presumably, the same holds for unnatural objects.

Accordingly, our NPU could map objects from X to the two-valued set $\{0, 1\}$.

$$\mu : X \to \{0, 1\} \text{ s.t. for any } x \in X:$$

$$\mu(x) := \begin{cases} 1 \text{ iff } x \text{ is a natural object} \\ \\ 0 \text{ iff } x \text{ is an unnatural object} \end{cases}$$

In the Schafferian model, natural objects all have naturalness measure of 1 and are all and only the objects that are included in total science. On the other hand, unnatural objects all have naturalness measure of 0 and are all and only those that are not included in total science.

An obvious way to understand the interplay between parthood, composition, and naturalness in this model would be the following:

(Natural Parity): If $x \sqsubset y$, then $\mu(x) = \mu(y)$

(Natural Additivity): $\mu(x) + \mu(y) = \mu(x \cdot y)$

But these principles are problematic. First, take my left half. It is arguably a proper part of mine. But it seems that my left half should be *less natural than* me. Or take me, my left half, and my right hand. It seems that I am *more natural than* each of them, so my naturalness measure should be greater than the sum of the individual naturalness measures of my left half and my right hand.

This is true. But the idea of scientific naturalness should be that all and only the natural objects are equally natural. That is, all and only the objects invoked by total science are equally natural. Arbitrary undetached parts such as my left half or my right hand are not natural objects in this sense. We need *natural parts* and *natural wholes*.

Consider a quark that is a proper part of my body and my body. Both objects are natural in the Schafferian sense – i.e. the quark is a natural proper part of a natural whole. Then, Natural Parity holds with no fuss[85].

Or take a hadron composed of two pairwise disjoint quarks. All three objects are natural in the Schafferian sense – i.e. the hadron is a natural whole with two natural proper parts, i.e. the quarks. Then, Natural Additivity too seems to hold too with no fuss.

But there remains a persistent problem with unnatural objects. In fact, it seems that we cannot qualify the unnatural case as we did with the natural one.

Consider a trog. It is arguably an unnatural whole. But it has natural

---

[85]Of course, you may disagree with the very idea behind Schafferian naturalness, but *if* one accepts it, then the restriction on natural objects works fine.

proper parts! Namely, a dog and a tree. In such as case, an unnatural version of Natural Parity and Natural Additivity will not work. Indeed, in the trog case, we want to say that dogs and trees are more natural than the trog they compose or, conversely, that a trog is less natural than the dogs and trees it comprises. And this is problematic for the Schafferian naturalness theorist.

A solution could consist of accepting the alternative model of Schafferian naturalness – i.e. the one according to which natural objects are all equally natural, while unnatural objects are more or less unnatural – and saying that Natural Parity and Natural Additivity hold of natural objects, while that something along the lines of Unnatural Parts Priority and Unnatural Pseudo-Subadditivity hold of unnatural objects.

The rationale would be that the natural objects are all robust enough to be all equally basic, as Schaffer says, while the unnatural objects are all nonrobust enough to be variously derivative.

To fully appreciate this point, we surely need further qualifications and clarifications. But first of all, we need some machinery.

Accordingly, we take the following alternative Schafferian NPU:

$$\mu : X \to [0, 1] \text{ s.t. for any } x \in X:$$

$$\mu(x) := \begin{cases} 1 \text{ iff } x \text{ is a natural object} \\ 0 \text{ iff } x \text{ is a perfectly unnatural object} \\ n \ (0 < n < 1) \text{ iff } x \text{ is a less than perfectly unnatural object} \end{cases}$$

And the following principles[86]:

---

[86]In what follows, I am going to use the superscripts "$+$" and "$-$" that qualify natural and unnatural objects, respectively, to enhance clarity and ease the understanding.

(Natural Parity): If $x^+ \sqsubset y^+$, then $\mu(x^+) = \mu(y^+)$

(Natural Additivity): $\mu(x^+) + \mu(y^+) = \mu(x^+ \cdot y^+)$

(Unnatural Parts Weak Priority): If $x^- \sqsubset y^-$, then $\mu(x^-) \geq \mu(y^-)$

(Unnatural Subadditivity): $\mu(x^-) + \mu(y^-) \geq \mu(x^- \cdot y^-)$

Under these new principles, natural objects, i.e. natural wholes with natural parts, will obey Natural Parity and Natural Additivity as expected. Unnatural objects, instead, will Unnatural Parts Weak Priority, and Unnatural Subadditivity.

The general idea is that natural objects such as hadrons, walls of bricks, and cells will be as natural as their natural parts, while unnatural objects will either be more unnatural than their parts or as unnatural as those. The former case is that of trogs, i.e. unnatural wholes composed out of natural parts, whereas the second of trout-turkeys[87] and the like, i.e. unnatural wholes composed out of unnatural parts.

The Emergentist SU Model

Finally, I want to discuss the emergentist model of SU. According to this model, among all the objects, some have *emergent unity* and in virtue of that are more natural than the parts they comprise.

---

[87]I remind the reader that trout-turkeys are not objects composed of trout and turkeys, but of undetached northern halves of trout and undetached southern halves of turkeys. So, strictly speaking, trout-turkeys are arbitrary fusions made up of arbitrary parts. These objects are different from e.g. trogs.

We can make better sense of this by, first, introducing the following package of theses[88]:

(Parts Priority): The existence of parts is metaphysically prior to the existence of the (non-emergent) wholes they compose.

(Emergent Wholes Priority): The existence of emergent wholes is metaphysically prior to the existence of the parts they comprise.

In this SU model, wholes are distinguished between *non-emergent* and *emergent*. The former are those whose intrinsic properties supervene on the intrinsic properties and relations of their parts (Parts Priority). Hence, their parts are metaphysically prior to them. The latter, instead, possess some intrinsic properties that *fail* to supervene on the intrinsic properties and relations of their parts. Hence, they are metaphysically prior to their parts (Emergent Wholes Priority).

As such, emergence[89] consists in irreducible ontological novelty in higher-level phenomena such as life (cf. van Inwagen 1990)[90], consciousness (cf. Merricks 2001), and quantum entanglement (Esfeld 1999, Ismael and Schaffer 2020, Maudlin 1998, Schaffer 2010a, §2.2, Zeh 2003). Therefore, living organisms, conscious beings, and quantum entangled systems[91] could all have irreducible emergent unity.

---

[88]For ease of exposition, I will drop, in what follows, a discussion on the well-foundedness of priority relations since it is not our focus here. But it should be presupposed.

[89]For more on emergence see Barnes (2012), Chalmers (2006), and Wilson (2021).

[90]Strictly speaking, van Inwagen do not talk of life in terms of emergence, but he could naturally be interpreted along these lines. Indeed, for van Inwagen, when and only when the activity of some xx constitutes a life, there is something irreducible that emerge from it which brings mereological complexity with it.

[91]A quantum entangled system is one whose quantum state cannot be factored as the tensor product of the state vectors of its components. By following Schaffer (*ibid.*), we can described it as follows: $\Psi_{system} \neq \Psi_{component-1} \otimes \Psi_{component-2} \otimes ... \otimes \Psi_{component-n}$.

In itself, the NPU for this model should not be a problem. In fact, we could safely proceed along the following lines:

$$\mu : X \to [0, 1] \text{ s.t. for any } x \in X:$$

$$\mu(x) := \begin{cases} 1 \text{ iff } x \text{ is a perfectly natural object} \\ 0 \text{ iff } x \text{ is a perfectly unnatural object} \\ n \ (0 < n < 1) \text{ iff } x \text{ is a less than perfectly natural object} \end{cases}$$

The problem is, rather, that it is not at all clear that the perfectly natural objects should be all and only emergent wholes such as living beings, conscious beings, or quantum entangled systems. So, it is not clear that $\mu(x) = 1$ iff x is an emergent whole.

The reason is that, without further clarifications, it is not clear *which* priority ordering naturalness is supposed to track in this model. As we are going to see, the question is all but trivial.

We have two options: (i) either naturalness tracks both priority orderings of Parts Priority and Emergent Wholes Priority, or (ii) it tracks only the priority ordering of Emergent Wholes Priority – in the latter case, we can conceive of naturalness itself as a full-fledged emergent phenomenon, i.e. *emergent naturalness*.

Presumably, then, according to option (i), it is true that that non-emergent wholes[92] are less natural than the parts they comprise, but it is *also* true that emergent wholes are more natural than the parts they comprise. On the other

---

The "Ψ" describes a quantum state, whereas "$\Psi_1 \otimes \Psi_2$" describes the tensor product of quantum states.

[92]Non-emergent wholes are, of course, wholes that have no intrinsic property that fails to supervene on the intrinsic properties and relations of the parts.

hand, according to option (ii), it is true only that emergent wholes are more natural than the parts they comprise.

As I understand it, the proponents of option (i) think that naturalness tracks fundamentality[93]. Mereological atoms ground[94] their non-emergent wholes just as much as emergent wholes ground their parts. So, in their own way, both belong to the fundamental base of the world. So, both carve nature at the joints and should be treated as perfectly natural objects.

On the other hand, the proponents of option (ii) think that naturalness does *not* track fundamentality, but rather ontological novelty in the world. Mereological atoms may be fundamental but display no ontological novelty. Emergent wholes, instead, may not be fundamental but display ontological novelty. So, only emergent wholes carve nature at the joints and, thus, should be treated as perfectly natural objects.

Both views are intriguing. For reasons of space and scope, though, we cannot offer a detailed discussion of all the questions that these views raise[95].

---

[93]This is the default view among Lewisians.

[94]I use this piece of terminology out of mere convenience. I do not wish to introduce any specific notion of "grounding". The background idea is always that of metaphysical priority about which I want to keep a neutral stance.

[95]Though, I would like to point out that the good-standing of option (i) depends by and large from which objects should have manifest emergent features. Consider the case of living organisms and conscious beings. In this case, the proponent of option (i), may very well say that quarks and leptons that compose things devoid of life or consciousness, e.g. a table or a wall of bricks, are just as fundamental/perfectly natural as living organisms and conscious beings. The former carve nature at its "dead and insentient" joint, whereas the latter at its "living and sentient" one. But, now, consider the case of quantum entangled systems. If quantum entanglement means emergence, then it may be that all physical systems, *viz.* all material objects, possess an irreducible quantum holism that makes them emergent wholes (cf. Toraldo di Francia 1998 and Zeh *ibid.*). In this case, it is hard to say how perfect naturalness could be found in objects other than the emergent wholes themselves. Thus, option (i) would lose much of its appeal in favour of option (ii). Naturally, much of this will depend on further technical considerations on emergence and quantum mechanics which we have no interest in pursuing here.

For us, the key point is the following one. Natural objects theorists who want to embed naturalness in their own framework can do it either by opting for option (i) or by opting for option (ii).

However, only option (i) seems to preserve some meaningful connection between parthood, composition, and naturalness, while option (ii) does without it completely.

Indeed, under option (i), principles such as the following ones seem to be viable:

(Non-Emergent Natural Parts Priority): If $x \sqsubset y$, then $\mu(x) > \mu(y)$

(Non-Emergent Natural Pseudo-Subadditivity): $\mu(x) + \mu(y) > \mu(x \cdot y)$

(Emergent Natural Wholes Priority): If $x \sqsubset y$, then $\mu(x) < \mu(y)$

(Emergent Natural Pseudo-Superadditivity): $\mu(x^+) + \mu(y^+) < \mu(x \cdot y)$

After all, take an alleged non-emergent whole e.g. a wall of bricks. In this case, we want to say that the bricks are more natural than the wall, and we want to say that the sum of the bricks' individual naturalness measures is greater than the naturalness measure of the wall. On the other hand, take an alleged emergent whole, e.g. a quantum entangled system. In this case, we want to say that the quantum state of the entangled system is more natural than the quantum states of its local components, and we want to say that the naturalness measure of the entangled system is greater than the sum of its local components' individual naturalness measures[96].

---

[96]I do not expect this to be an especially faithful quantum-mechanical example. Quantum mechanics is fraught with complications, but for our present purposes, it should be clear enough. If you think otherwise, though, you can change the example with other cases of emergent wholes. Nothing special hinges on the quantum-mechanical case.

Under option (ii), though, similar principles do not seem to be available. After all, if option (ii) holds, we are free to say that the bricks are more fundamental than the wall they compose without thereby saying that the bricks are more or less natural than the wall. So, parthood and composition do not appear to track naturalness anymore, but rather ontological novelty itself, whatever that means[97].

1.5 Benefits of SU

In this section, we review some crucial benefits that SU has. It turns out that SU is quite advantageous and paves the way for new interesting solutions to old Universalistic issues.

1.5.1 Reconciling Unrestricted Composition with Our Best Science

At the beginning of our discussion, we argued that Standard Universalism, because of its unstructured and egalitarian conception of composition, lacks the expressive resources to account for the explanatory demands of our best science. In particular, to account for the fact that our best science requires wholes to be structurally robust and nomologically relevant.

We also said that biting the bullet or trying to deflate the issue would be unpromising and shortsighted strategies. Thus, we concluded that Standard

---

[97]Perhaps, though, we should distinguish between "fundamental parthood" and "natural parthood" so as to allow fundamental parthood to track fundamentality, while natural parthood ontological novelty. This is an interesting option worth exploring in future research.

Universalism must abandon its unstructured and egalitarian conception of composition, and face revision[98].

The good news is that Structured Universalism can amend the rift between our best science and fully acknowledge the structural demands that our best science places on composition.

Indeed, Structured Universalism, because of its structured and inegalitarian conception of composition, is in the position to accept that the objects of our best science are *metaphysically elite.* That is, they carve nature at the joints and, thus, exhibit that sort of structural robustness that makes them nomologically relevant, i.e. eligible to play a meaningful role in lawful explanations of the world. In other words, SU is in the position to accept that the objects of our best science are *natural* (in our sense).

The fact that Structured Universalism allows us to adhere to an abundant ontology of wholes while reconciling us with the scientific image of the world – at least in its explanatory demands – is, as far as I am concerned, a welcome advantage of the view.

1.5.2 Lewisian Aristotelianism

As we noticed profusely, Standard Universalists are reluctant to acknowledge any metaphysically meaningful difference among composite objects. Their unstructured conception of composition bans any concern about structure and favours only generative power: if there are some *xx*, then there is a

---

[98]Originally, we noted that the rift between our best metaphysics of material objects, i.e. Universalism, and our best science would make the internal coherence of our best total theory falter. But there is no need to say this again here.

whole composed out of them. That is the sad, whole story[99].

Neo-Aristotelians[100], e.g. Fine (1982, 1994aa, 1994bb, 1999, 2010), Jaworski (2016), Johnston (1992, 2002, 2006), Koons (2014), Koslicki (2007, 2008, 2018), and Sattig (2015), have been among the fiercest opponents of Standard Universalism and, especially, of its unstructured conception of composition. Their common complaint is that Universalism fails to appreciate the metaphysically meaningful distinction between "mere sums" and "mere aggregates" and, on the one hand, and "genuine wholes" and "integrated wholes", on the other.

This is a venerable distinction rooted in Aristotle's own metaphysics of material constitution and, then, ingeniously carried on – among others – by the Medieval Aristotelians[101] and the phenomenological school of Brentano and Husserl[102]. Consider his words in *Met.*, Θ, 1041b12-17 (1984)[103]:

---

[99]Pun intended.

[100]Sometimes, for ease of exposition, I will talk simply of "Aristotelians".

[101]See, for instance, Arlig (2007, 2011, 2012) and Henry (1991).

[102]Three clarifications. First, I am well aware that Brentano is, strictly speaking, not a phenomenologist but the forerunner of the phenomenological movement properly initiated by Husserl. I think, though, that in the present context, we can indulge in a little bit of historical inaccuracy and associate Brentano – broadly, if you want – with the phenomenological school. Second, I am also well aware that describing the phenomenological school as "the school of Brentano and Husserl", thereby leaving out other astounding phenomenologists such as Roman Ingarden, Edith Stein, Adolf Reinach, Nicolai Hartmann – not to mention the influence exerted on them by Carl Stumpf's work on Gestalt psychology –, is way too simplistic to be correct. But, given our present purposes, thinking of the phenomenological school in terms of Brentano and Husserl is more straightforward and good enough to make our point (but see Kriegel 2018, Simons 1982, 1992, Smith 1982, 1987, 1988, Smith 2013, and Zahavi 2017). Third, in this work, I will consider Brentano and Husserl – and the phenomenological school they represent –, broadly speaking, as Aristotelians. As simplistic as it could be, I will not consider it wrong, especially considering the obvious intellectual debt that the phenomenological school has towards Aristotle (let us not forget that Brentano himself was an Aristotle scholar). Such a debt is even stronger if we consider the theme of the metaphysical unity of material objects, which is our present focus. Thus, I will consider the label justified.

[103]A clarification: the direct quotations are all from the translation of W.D. Ross.

> That which is compounded out of something so that the whole
> is one, not like a heap, but like a syllable . . . is something
> – not only its elements (the vowel and the consonant) but also
> something else

It is not difficult to see that, under the standard conception of Universalism, *all* wholes turn out to be "heaps". But as the Aristotelians point out, this is wrong since some wholes – i.e. the "genuine wholes" – are metaphysically structured so as to exhibit *unity*. Consider Aristotle again (*Met.*, Δ, 1023b26–29):

> We call a whole (1) that from which is absent none of the parts
> of which it is said to be naturally a whole, and (2) that which so
> contains the things it contains that they form a unity; and this
> in two senses – either as each and all one, or as making up the
> unity between them.

Abelard (*Dialectica*, v, i, 4; 1956, pp. 550f):

> One cannot say that in order for this house to be, it suffices that
> the matter exists; otherwise the timber and the stones could be
> described as this house even before fabrication; rather, a formal
> arrangement is also necessary.

But also Husserl (1900-1, p. 475)[104]:

---

[104]Husserl calls genuine wholes "pregnant wholes" and the unifying relation "foundation" (*Fundierung*). For more on this see Casari (2000) and Correia (2004).

> By a Whole we understand a range of contents which are all covered by a single foundation without the help of further contents. The contents of such a range we call its parts.

It should be clear from what I have said throughout the present Chapter that I *agree with* the Aristotelians on this. In fact, I have pressed the Universalists to equip their abundant ontology of wholes with a theory of naturalness for objects. The result – i.e. Structured Universalism – says that there really is a metaphysically meaningful distinction between wholes such as trogs, trout-turkeys, nosetowers, and wholes such as hadrons, people, sea-slugs, flowers, and whatnot. The former do not carve nature at the joints, hence are *unnatural wholes*, whereas the latter do carve nature at the joints, hence are *natural wholes*.

All this we know. The interesting question is whether we needed Structured Universalism when we already had neo-Aristotelianism. Indeed, some may fear that Structured Universalism is watered down Aristotelianism, or Lewisianism in Aristotelian clothes. Thus, to put it bluntly, what is the point of it when we can have the real deal?

I think the point deserves to be addressed since it casts doubts on the good standing of the theory we are proposing and its credibility.

Structured Universalists and Aristotelians share a lot in terms of spirit, but diverge no less in terms of the letter. Indeed, the Aristotelian structured conception of composition relies crucially on the *hylomorphist* assumption that material objects have *Forms*, i.e. non-material, property-like constituents, that organize their parts. In fact, the hylomorphist assumption

has it that material objects are compounds of matter and form.

In general, Forms specify a principle of unity that dictates how the parts of a given object should be arranged so as to compose that object. Thus, without Forms, composition cannot occur since the composers would have no "recipe" for how to arrange in order to make a further object. As such, Forms impose structural requirements on composition.

For instance, some xx compose a sea-slug iff the xx are arranged according to the principle of unity the Form SEA-SLUG embeds. Presumably, in this case, the principle dictates that the xx must be arranged into a whole with a high degree of unity.

Some Aristotelians maintain that there are no scattered wholes such as trogs and trout-turkeys because there are just enough Forms as there are natural kinds. Thus, while there are Forms for, say, dogs and trees, there are no Forms for trogs and trout-turkeys (see Koslicki 2008, Ch. VII). Other Aristotelians, instead, maintain that there are all sorts of wholes because there are Forms for any way of specifying the arrangement of some xx. Thus, there are Forms for scattered as well as unified wholes (see Fine 1982, 1999)[105].

Be as it may, Forms are elusive. For instance, Koslicki remains persistently neutral on whether Forms should be properties, relations, powers,

---

[105]Note that this would make the ontology of the Aristotelian *superabundant*, in fact incredibly much more profligate than the ontology of the Universalist (Fine 1999). Indeed, if there are Forms for *any* ways of specifying the arrangement of some xx, then there is a whole for any way of arranging the xx. For instance, consider the particles that compose a wall of bricks. According to the plenitudinous Aristotelian, for any spatiotemporal configuration of the particles, there is a whole. Thus, the wall is going to share the place with countless other bizarre wholes. This, in effect, makes for the "explosion of reality" (cf. Sosa 1993, Van Cleve 2008, Koslicki 2007). Ironically, the Aristotelians usually accuse the Universalists of accepting an implausible ontology, but "unbridled Aristotelianism", as Van Cleve (*ibid.*) calls it, seems no more respectable than Universalism, in fact it looks *prima facie* much worse.

functions, or something else altogether (cf. Koslicki 2008, p. 175 and p. 254, 2018, Ch. 3); Fine argues that they are *sui generis* relations (cf. Fine 1999); while for Koons (2014) and Jaworski (2016) are particular higher-level powers that "transform" or "configure" matter. In each case, we are none the wiser.

Moreover, according to certain Aristotelians, most notably Koslicki (2008, 2018) and Fine (1999), Forms, whatever they may be, should be *proper parts* of material objects. Thus, principles of unity themselves inhere – literally – in their wholes[106], and structure them "from within". This is surely a peculiar view[107].

Of course, I do not think that the neo-Aristotelians are wrong because their views sound peculiar to me. Rather, I think that the neo-Aristotelians

---

[106]Fine talks of "intensional element" of wholes (1999, pp. 73ff), whereas Koslicki of "recipe for building wholes", "formal components", and "slots" (2008) as proper parts of wholes. Consider, respectively, Koslicki (*ibid.*, p. 176):

> In line with the "wholes as *composed* of structure" model [...], the present approach adopts a thoroughly *mereological* conception of composition: both the material components and the formal components of a whole, on this view, are taken to be *proper parts* of it.

And Fine (*ibid.*):

> The material world is standardly conceived in extensional terms. It is allowed, under this conception, that material things may have properties or enter into relations, but these properties or relations are not themselves taken to be constitutive of mate-rial things in the same kind of way that they are constitutive of the propositions concerning those things. But on the view I wish to advocate, properties and relations will be as much involved in the identity of the one as of the other.

[107]And it could also be badly costly. Indeed, plenitudinous Aristotelians such as Fine (1999), in order to account for composition, would posit countless *sui generis* building relations *in* objects themselves. Thus, a neo-Aristotelian mereology would be ideologically much more profligate and much less elegant than classical mereology (cf. Koslicki (2007). Of course, Aristotelians can opt for limiting these ideological posits in the vein of Koslicki (2008), but then one would have to accept restricted composition, which is notoriously problematic (see the next Section).

hold views that are controversial enough to leave the *non*-Aristotelians that believe in structured composition and the "mere sum" vs "genuine wholes" distinction wondering whether such views are the lesser evil.

I think this is where Structured Universalism comes into the picture. SU, in effect, presents itself as a credible alternative to all those suspicious of Forms and their elusive nature, and that refuse to accept that material objects have any "formal recipe" among their parts.

In particular, SU offers a *primitive* distinction between natural and unnatural wholes according to which natural wholes are mereologically structured and nomologically relevant, whereas unnatural wholes are mereologically gerrymandered and nomologically otiose.

Natural wholes form a unity and, thus, count as genuine wholes because their parts are intimately related to one another and deeply unrelated to other non-parts[108]. Unnatural wholes, on the other hand, fail to form a unity and, thus, count as a mere sum, because their parts are intimately unrelated to one another and related to other non-parts. Structure is not imposed, it is the nature of the objects themselves.

This is what differentiates dogs, trees, hadrons, and glucose molecules from trogs, trout-turkeys, and nosetowers. We need no Forms to account for this metaphysically meaningful distinction.

Moreover, under SU, principles of unity are *measure functions* that describe the degree of naturalness of objects. They need not have to be "formal" proper parts, or *sui generis* relations, or higher-level powers that "transform"

---

[108]Of course, in the case of mereological atoms, natural wholes are intimately related with themselves.

or "configure" the parts of a whole. And this, for Form skeptics, is a welcome result[109].

All in all, SU provides an independent Lewisian way to the Aristotelian distinction between "mere heaps" and "genuine wholes" which is fruitful; appealing for those that have Lewisian rather than Aristotelian leanings; and *prima facie* more plausible, both ideologically and ontologically, than neo-Aristotelianism.

Whether this provides a decisive reason for Structured Universalism against neo-Aristotelianism is for future work to decide, but, for now, we can notice how a Lewisian understanding of structured composition allows the Universalists to rival the Aristotelians without thereby incurring in their costly Aristotelian commitments.

---

[109]It should be noted, though, that *some* contemporary Aristotelians such as Mark Johnston could be closer with my position than with that of other Aristotelians. Indeed, as Simpson (2023, pp. 14ff) interestingly points out, Johnston accepts that "Matter" and "Form" are not really *metaphysical constituents* of material objects, but rather useful *metaphysical concepts* to analyze material objects. Indeed, while Johnston adheres to the traditional conception of hylomorphism (2006, p. 658):

> [hylomorphism] is the idea that each complex item admits of a real definition, or statement of its essence, in terms of its matter, understood as parts or components, and in its form, understood as a principle of unity

He goes on to argue that a "real definition" or "statement of essence" for an object is a statement along these lines (*ibid.*):

> *What it is for* ... (the item is specified here)... *to be is for* ... (some parts are specified here) ... *to have the property or stand in the relation* ... (the principle of unity is specified here).

And, more specifically, that a principle of unity is just a relation between the parts and their whole, e.g. in the case of molecules, chemical bonding (cf. Johnston *ibid.*). Thus, "Forms", for Johnston, are not constituents of objects, but relevant relations that account for their degree of structural robustness. This is admittedly very close to SU, but it seems fair to say that it is not the most popular position among the Aristotelians.

1.5.3 Restricted Composition with No Restrictions

Restricting composition so as to account for all and only the objects that our common sense and best science acknowledge is tempting. After all, we are naturally inclined to believe in dogs, people, glucose molecules, and mountains, but not in trogs, trout-turkeys, nosetowers, and other compositional monstrosities.

Unfortunately, we know that doing without monsters could lead us to even more monstrous outcomes. In effect, any attempt to confine or restrict composition ends up falling prey to (i) the Lewis-Sider argument from vagueness (Lewis 1986, pp. 212-3, Sider 2001 §4.9.1)[110], or (ii) arbitrariness and anthropocentrism (Hawthorne 2006, p. vii), or (iii) brute facts (Markosian 1998), or (iv) deeply uncommonsensical (Hudson 2001, Ch. 3, 2006)[111]. De-

---

[110]The original vagueness argument is in Lewis (1986a, pp. 212-213):

> The trouble with restricted composition is as follows [...] To restrict composition in accordance with our intuitions would require a vague restriction. But if composition obeys a vague restriction, then it must sometimes be a vague matter whether composition takes place or not. And that is impossible. [...] There is such a thing as the sum, or there isn't. It cannot be said that, because the *desiderata* for composition are satisfied to a borderline degree, there sort of is and sort of isn't.

It returns in Lewis (1991, pp. 80ff) and it gets further elaborated in Sider (1997, §3.1; 2001, §4.9.1) – in fact, the proper formulation of it is perhaps best attributed to Sider (cf. Simons 2006, Korman 2010a, Korman and Carmichael 2016, §3, and Lando 2017, Ch. 13). The argument has sparked a vast literature. Among its defenders, we find Van Cleve (2008, §3), López de Sa (2006), and Kurtsal Steen (2014), whereas, among its critics, van Inwagen (1990, §19), Hudson (2000, 2001, §3.7), Koslicki (2003, §3), Merricks (2005), Elder (2008, §2), Tahko (2009), Korman (2010bb, 2015, §6.7), and Magidor (2015).

[111]Without going into details that would take us afield, suffice it to say that the only legitimate restriction that Hudson admits would still give us a lot of strange fusions, and would even posit the *null individual* – which, for Hudson, could be God itself in its divine omnipresence! In fact, it should be noted that Hudson would be willing to restrict composition not to accommodate our intuitive or scientifically informed worldview, but only to avoid mereological versions of Russell's paradox that affected Naive Set Theory and its Unrestricted Comprehension Principle, i.e. the existence of a universal set. We have no space for debating on this. But see Bigelow (1996) and Cotnoir and Varzi (2021,

spite the willingness to bite the bullet and accept one between (i)-(iv) of some, restricted composition remains severely problematic.

In this respect, I think Universalism still fares better than Restrictivism. Indeed, *pace* van Inwagen (1990, Ch. 17-19) and Korman (2015), I claim that entailing no threat of vague composition, or vague existence, or vague identity is an important advantage of doing without restrictions on composition.

With that being said, *contra* usual Universalists, I do not maintain that our ordinary preference for certain wholes is just the result of loose talk, or mere lack of interest in extravagant objects, or even outright ontological insensitivity (cf. Korman 2015, Ch. 5).

In fact, I maintain that the wholes we take to populate the world enjoy elite *metaphysical* status in virtue of their naturalness, i.e. in virtue of the fact that they are joint-carving, hence are mereologically structured and nomologically relevant.

If we accept this and accept, further, that wholes are gradable with respect to their naturalness, i.e. can be more or less natural, then we can say that there is a continuum of natural objects such that the less natural an object is, the less easy is for us to track it[112].

If so, we can say (i) that, ordinarily, we are "metaphysically drawn" to certain wholes, i.e. the natural ones, and (ii) that, ordinarily, we vaguely restrict our composition around relatively highly natural objects. Since there

---

§5.4.1).

[112]This is an objectual version of the Lewisian doctrine of *reference magnetism*, namely, the view that some objects are intrinsically more eligible than others to serve as semantic values for our words (see Merrill 1980, Lewis 1983a, pp. 370–7, 1984, pp. 226–9). Note that the natural magnetism that objects exert should be balanced with facts e.g. about our perceptual endowments. See Chapter 2 for more on this.

is no single preferred naturalness grade in the naturalness continuum, there is going to be semantic indecision about which exact grade of naturalness our restriction latches on. Hence, we are going to have indecision about whether, say, "dog" or "tree" pick out an object with naturalness degree n or, rather, m (for $n \neq m$).

This is how we can have a "vague restriction" on composition without thereby having vague composition, existence, or identity[113] – remember, we are Structured Universalists are Universalists, so composition for us *always* takes place.

Maybe, this will not do much for those opponents that hold Universalism responsible of positing objects with unexplained or absurd persistence conditions (cf. respectively Thomson 1983, p. 213, Koslicki 2003, p. 127 and van Inwagen 1990, pp. 75ff); or that clash with our referential practices (Koslicki 2014); or that lack causal powers (Elder 2004, ch. 3)[114]; or that have no properties at all (Elder 2008, §4); or that can travel at superluminal velocity thereby violating principles of mass-energy Conservation (Balashov, 2005, p. 527f, Hudson 2002).

Maybe not. However, setting aside all these specific charges[115], it is an undeniable fact that Structured Universalism offers an attractive third way between Standard Universalism and Restrictivism. Indeed, it has many of the intuitive advantages of restricted composition without sharing its limits. It is restricted composition without restrictions. The advantage is real, not

---

[113]This seems consonant also with how Lewis thought about relative naturalness. As Dorr and Hawthorne (2013, p. 60) note, indeed, Lewis maintained that relative naturalness is vague.

[114]Though, see below and Chapter 2 for a reply on this in favour of the Universalist.

[115]This is not the place to address all of them. Our aim, here, is more broad in scope.

a theft over honest toil.

1.5.4 Reconciling Unrestricted Composition and Perceptual Beliefs about Ordinary Objects

Previously, I said that I disagree with those Universalists that attempt to explain away the rift with ordinary judgments about composition[116]. And I said that Structured Universalism fares better than Standard Universalism also because it *reconciles* – to a certain extent – the judgments of Universalism with some of our ordinary judgments about composition. Still, Structured Universalism affirms, while ordinary thinking denies, that there are countless bizarre fusions such as trogs, trout-turkeys, and nosetowers. Thus, Structured Universalism and ordinary thinking are going to clash in any case. Thus, we need to get clearer on what sort of reconciliation with ordinary thinking Structured Universalism has to offer.

Call *compatibilism* the view that the conflict between ordinary thinking and Universalism is apparent[117], while *incompatibilism* the view that such conflict is genuine[118] (see Korman 2015, Ch. 5).

Most compatibilists believe that ordinary thinking does not really conflict with Universalism insofar as it does not really deny the existence of bizarre fusions. It ignores them by indulging in loose talk, lack of interest,

---

[116]When I talk of common sense or ordinary thinking, I have in mind scientifically informed common sense or ordinary thinking.

[117]See e.g. Lewis (1986a, p. 213), Sider (2001, p. 218), Varzi (2003, pp. 213-214).

[118]See e.g. Heller (1990, Ch. 4), Merricks (2001, pp. 171-172), and Sider (2004, p. 680). Actually, Merricks is not a Universalist – in fact, he denies the existence of everything but conscious beings and subatomic particles –, but the strategy he envisages could be adopted also by Universalists. See below.

or ontological insensitivity. On the other hand, most incompatibilists believe that our ordinary thinking does really conflict with Universalism insofar as it really denies the existence of bizarre fusions. It does so because of a lack of analytical rigour that triggers the formation of false beliefs[119].

Dan Z. Korman (2008, 2009) has called out both parties and, in particular, argued that compatibilism relies on a substantial lack of evidence and dubious psychological ascription, while that incompatibilism faces resistance from perceptual evidence and ordinary intuitions.

As I have already said, I do not share the widespread inclination among Universalists to accuse ordinary thinking of loose talk, lack of interest, or ontological insensitivity. Accordingly, I reject compatibilism and follow Korman in pointing out that the Universalists should simply stop pretending that the folk "[are] part of the [U]niversalists gang" (Korman 2008, p. 325).

However, I accept incompatibilism and argue that Structured Universalism offers a good explanation of why the folk hold false beliefs about what exists. And I argue also that Structured Universalism can do it without the drawbacks of envisaged by Korman (2009).

Since this will be the main topic of our next Chapter, I will spare the details in favour of a concise yet effective discussion of some key dialectical points.

Let us start by assuming that, ordinarily, we form our ontological beliefs by relying crucially on perceptual evidence. For instance, when forming the ontological belief "There are some chairs", perceptual evidence of chairs –

---

[119]These false beliefs, though, could be reasonably held in ordinary contexts as "correct" or even "nearly as good as true" (Merricks 2001). Of course, these notions are weaker than truth.

the experience of chairs – seems crucial.

Then, say that at least some of the natural wholes entailed by Structured Universalism are robust enough and nomologically relevant enough for hinging our perceptual beliefs. Perhaps, because they are metaphysically suited to serve as the contents of our experiences. For instance, dogs, chairs, kazoos, and trees, are such natural wholes. Call this subclass of the natural wholes the class of the *perceptually natural wholes*. These wholes carve nature at the perceptual joints. On the other hand, say that unnatural wholes are nonrobust enough and nomologically irrelevant enough to be metaphysically unsuited to hinge our perceptual beliefs and, hence, to serve as the contents of our experiences. In effect, we do not have experiences of trogs, trout-turkeys, and nosetowers. Call the unnatural wholes, in this context, *perceptually unnatural wholes*. These wholes fail to carve nature at the perceptual joints.

Then, say that, ordinarily, we have ontological beliefs about x iff x is a perceptually natural whole. Conversely, say that, ordinarily, we have no ontological beliefs about x iff x is a perceptually unnatural whole[120].

Accordingly, I say that, on average, we are strongly disposed to form folk ontological beliefs about – say – dogs, trees, tables, and kazoos *because* these objects are relatively highly natural wholes. On the other hand, I say that, on average, we are not so disposed to form folk ontological belies about – say – trogs, trout-turkeys, and nosetowers *because* these objects are relatively highly unnatural wholes.

---

[120]I remind the reader that we are discussing only the case of ordinary perceptual experiences.

Now, Korman (2014, pp. 17-18, 2015 §§7.5-7.6) has stressed that our ordinary judgements about what exists do not rely solely on perceptual evidence, even if they do crucially. But relies also on intuitions and, perhaps, on some sort of *a priori* insight about the conditions under which composition should occur. We will have time to discuss the cogency of this proposal, which I reject; for now, though, we focus only on perceptual beliefs for it will suffice to illustrate our point.

And our point is that the hypothesis of perceptually natural/unnatural wholes that SU allows puts us in the position to explain what happens when folks affirm the existence of dogs and trees while denying that of trogs, trout-turkeys, and nosetowers. Namely, the folks affirm the existence of dogs and trees while denying that of trogs and trout-turkeys because, in order to form ontological beliefs, they rely only on those wholes that have perceptual joints and, thus, are suited to serve as contents of our experiences. Conversely, the folks deny the existence of trogs, trout-turkeys, and nosetowers because they do *not* rely on those wholes that lack perceptual joints and, thus, are unsuited to serve as the contents of our experiences.

Finally, we could say that SU and ordinary thinking agree "locally", while disagree "globally" in the sense that they agree at least on the existence of perceptually natural wholes. If so, we can resort to a Merricksian "reconciliatory" strategy as follows. Say that a false ontological folk belief about x is reasonable to hold/correct iff it is nearly as good as true. And say that a false ontological folk belief about x is nearly as good as true iff x is a perceptually unnatural whole.

In ordinary contexts, it is excusable to hold false beliefs such as "There are

no trogs" because trogs are unnatural and, in ordinary contexts, we are not called on to evaluate why our ontology would benefit from unnatural objects and why excluding unnatural objects would be objectionably arbitrary.

All in all, SU provides a credible incompatibilism that does without dubious folk psychological hypotheses, or perceptual luck[121], or bizarre stories about how we would ordinarily fail to see what we have right in front of our eyes – in fact, there is nothing *right in front of our eyes*. Another welcome result for SU.

1.6   Conclusion

Time to take stock. In this chapter, we have shown how a theory of Universalism that discriminates between wholes that are mereologically robust and nomologically relevant and wholes that are mereologically scattered and nomologically otiose – in other words, that discriminates between *natural* and *unnatural wholes* – could prove incredibly beneficial for Universalists. Especially, in two main areas: first, with its "Natural Principles of Unity", it allows for the formulation of an elegant and powerful theory of natural objects that can rank and model the structure of objects according to various metaphysical pictures of the world; second, with its abundant yet inegalitarian ontology of wholes, it mitigates several expressive limitations of Standard Universalism, while pursuing a quasi-Aristotelian agenda in metaphysics.

The former stretches the boundaries of Universalism towards a full-fledged

---

[121]Under SU, ordinary people are not perceptually lucky in the sense that ordinary perceptual beliefs are *not* accurate, if they are, by sheer coincidence or accident. In fact, their accuracy is grounded in the very nature of wholes and their objective structural features. It could be that this is a contingency, but it could not be a fortuitous accident.

measurement theory for objects, while the latter breaks new conceptual grounds for Universalism thereby permitting a more comprehensive and subtle analysis of material objects. All in all, I maintain that our new theory of Universalism – Structured Universalism, as we have called it – improves substantially on its predecessors and succeeds in giving us back a Universalistic world we can recognize.

Chapter 2

In Favour of Permissivism in Metaphysics

2.1 Introduction

Let us follow Korman (2015) and say that when we do ontology, there are three main options on the table:

(Permissivism): The world contains ordinary and extraordinary objects[1].

(Conservatism): The world contains only ordinary objects.

(Eliminativism): The world contains nothing ordinary or extraordinary.

The idea is that if we are Conservatives, in assessing which objects there are, we should trust (by far and large) our manifest image of the world. So, the

---

[1]Here, I am following Korman also terminologically. But the distinction between ordinary and extraordinary objects could be said to correspond, roughly, to our natural/unnatural distinction. So, it is just another way to call it.

world should contain only ordinary objects such as dogs, trees, people, flowers, rocks, lakes, smartphones, and whatnot[2]. On the other hand, if we are Permissivists or Eliminativists we will not be thus trustful, and opt for revision. In particular, Permissivists will think that the world should contain *also* extraordinary objects such as trogs, trout-turkeys, and nosetowers, whereas Eliminativists will deny that the world should contain anything ordinary and extraordinary.

We should, then, clarify from the outset that Permissivism, Conservatism, and Eliminativism are not really specific views, but rather families of views. Thus, there are many ways of spelling out one's own Permissivist, Conservative, or Eliminativist beliefs.

For instance, among Permissivists, we can find those that hold that for any xx, there is a whole composed out of them, but also those that hold that for any world w and spacetime region R, there is a material object that exactly occupies R in w[3].

Among Conservatives, instead, we can find those that hold that there are only enough Forms to make up ordinary objects (cf. Koslicki 2008), but also those that hold that only ordinary objects are bonded (cf. Carmichael 2015, McKenzie and Muller 2017), and those that hold that our ordinary

---

[2]Korman is interested, first and foremost, in defending our ordinary thinking about the world, but I think it would be wiser to assume a scientifically refined version thereof.

[3]The first view is, of course, Universalism, while the second is known as "Material Plenitude" (see Hawthorne 2006). Both have similar ontological consequences, but should not be conflated. Indeed, some Universalists may want their abundant ontology to exclude massive material overlap (cf. Van Cleve 2008), while some "plenitude lovers", as Hawthorne (2006) calls them, may want their abundant ontology of materially coinciding objects to be constitutionally rather than mereologically related (cf. Miller 2006). That said, Permissivists are no friends of restrictions in ontology *in general* and, thus, it is common for them to embrace *both* Universalism and Material Plenitude (cf. Hawthorne 2006, Hawthorne and Fairchild 2018, Lewis 1993b).

judgments about the world are true as a matter of brute fact (cf. Markosian 1998a).

Finally, among Eliminativists, we can find those that hold that there are no composite objects whatsoever, but only atoms arranged such-and-such (cf. Dorr and Rosen 2002), but also those that hold that no objects correspond to our concept of ORDINARY OBJECT (cf. Unger 1979b 1979a, 1979c), and those that hold that no ordinary object exist fundamentally (cf. Sider 2011, 2013).

I am a Permissivist and, in this Chapter, I will defend the good-standing of Permissivism in metaphysics[4]. More precisely, I will defend Permissivism from two interesting challenges: *Korman's Challenge* and *Koslicki's Challenge.*

The first has been raised in *Objects: Nothing Out of the Ordinary* (2015), where Korman argues with clarity and acuity that, given our ordinary intuition and perceptual experiences, Permissivism is in no position to justify extraordinary ontological beliefs, e.g. "There are trogs". On the other hand, Conservatism is well-placed to justify ordinary ontological beliefs, e.g. "There are dogs".

The second has been raised in "Mereological Sums and Singular Terms" (2014), where Koslicki cleverly argues that even if Lewisian Permissivists accept naturalness, they cannot reclaim our use of singular terms and the notion of "well-demarcated object", while Conservatives, by learning an important lesson from Evans (1975) on predication and indeterminacy, are well-placed

---

[4]Let me point out that, in this Chapter too, my attention will devoted, first and foremost, to compositional Permissivism, i.e. Universalism. However, my defense of Permissivism could be also taken broader in scope.

to do so.

Both challenges are serious enough to require a proper response from the Permissivist camp. Thus, in this Chapter, we will critically engage with Korman and Koslicki and, eventually, argue that if Permissivists accept Structured Universalism, they can resist both challenges effectively and elegantly.

The Chapter unfolds as follows. In §2.2, I present Korman's Challenge and, in §2.2.1, critically assess the core of his Conservative strategy: the argument from counterexamples. Then, in §2.2.2, I present three so-called debunking arguments: the argument from authority, the argument from causal overdetermination, and the argument from fragility. Such arguments, usually, are advanced by Permissivists against Conservatives, but Korman argues that they backfire badly against Permissivists. Then, in §2.3. we assess Korman's preferred solution to justify conservative beliefs: namely, the theory of rational insights or apprehensionalism. I offer some criticism against the view on the ground that it is elusive and theoretically shaky. In §2.3.1, I also raise a more general worry that Conservatism may not be in the position to have what it wants. In particular, that given its acceptance of the manifest image, it could either undercut its evidential source or it could end up accepting extravagant ontological hypotheses. Then, in §2.4, I develop my Permissivist reply to Korman. In particular, in §2.4.1, I develop a theory of perceptual magnetism that can explain what sorts of objects are eligible to serve as contents of our experiences. Then in §2.4.2, I reject the evidential importance of ordinary intuitions. Finally, in §2.5, I systematically apply Perceptual Magnetism against Korman and claim dialectical victory over his conservative proposal.

Then, I turn to Koslicki's Challenge. In §2.7, I present her Evensian position on singular terms and well-demarcated objects. Then, I propose three arguments on her behalf: the argument from domain division, the argument from impotence, and the argument from indeterminacy. Finally, in §2.8, I reply and defy all of these arguments by pointing out either that Structured Universalism has the better hand or that it is a stand-off. All in all, I argue that Permissivism wins the dialectic challenge from Koslicki.

2.2 Korman's Challenge

In this section, we discuss, assess, and eventually solve Korman's Challenge.

2.2.1 The Arguments from Counterexamples

A crucial part of Korman's Conservatism revolves around the defense of what he calls "arguments from counterexamples" (Korman 2015, Ch. 4). Consider the following one:

(CX1) If universalism is true, then there are trogs.

(CX2) There are no trogs.

(CX3) So, universalism is false.

As a matter of fact, this is a simple *modus tollens*. So, it is clearly valid. But, in itself, this is of little interest for us. What is of interest for us is, instead, *how* and *why* the counterexample step, i.e. (CX2), can be justified.

Korman makes it clear that Conservatives can either say that (CX2) is justified *ultima facie*, or that (CX2) is justified *prima facie*. The former seeks decisive reasons for (CX2), while the latter defeasible epistemic indicators that strongly support (CX2).

Among proponents of the *ultima facie* strategy, Korman mentions Hirsch (2005) and Thomasson (2007) who maintain, respectively, that (CX2) is warranted (*ultima facie*) by charity or by "easy" analytic entailment. Korman rejects these strategies, especially given that, *pace* Hirsch, ordinary speakers could be to be reasonably mistaken in believing (CX2), and that, *pace* Thomasson, even the existence of trogs and trout-turkeys could be established through "easy" analytic entailment (cf. Korman 2015, §§4.4.1-4.4.2).

However, Korman maintains that *experience* and *intuitions*, i.e. perception and contentful intellectual (self-evident) seemings, justify *prima facie* (CX2). The idea is simple. If beside dogs and trees there really were trogs, that is "tremendous dogs with tree trunks growing out of their backs"[5], then we should be able to have trog experiences. But we never do. In fact, upon seeing a dog resting in the shade of a tree trunk[6], we see just a dog and a tree, no trog. So, unless perception is mostly unreliable as a source of evidence, there seems to be no trogs. A lesson that is further reinforced by our intuitions about composition, according to which dogs and trees do not compose anything, let alone anything as mereologically monstrous as a trog. Overall, (CX2) is warranted by experience and intuitions.

True, the warrant is *prima facie*, so it is open to defeat. However, Kor-

---

[5]This phrase is due to Korman (*ibid.*, p. 30).
[6]The example is due to Korman (*ibid.*, p. 30).

man thinks Permissivists are ill-placed to offer defeaters for (CX2) without thereby undercutting evidence they themselves are poised to accept, i.e. perceptual evidence for ordinary objects. On the other hand, he contends that Conservatives are well-placed to accept (CX2) and offer, on that basis, a definitive answer against Permissivism.

So, in what follows, we will further explore how Permissivists usually try to undercut evidence for (CX2), why these attempts fail, and why Korman thinks Conservatives can have the last word[7].

2.2.2 Debunking Arguments

Debunking arguments in metaphysics aim to show that there is no robust connection between how we take the world to be and how the world really is. In particular, the reasons why we take the world to be populated just by ordinary objects, rather than by ordinary and extraordinary objects, are irredeemably arbitrary and anthropocentric, i.e. the result of biological and socio-linguistic contingencies. Hence, they do not stand serious ontological scrutiny.

---

[7]Korman's reasoning may be a non-starter. Indeed, as we shall see later on, the gist of the argument lies in the fact that, for Korman, Permissivism is the thesis that "there are swathes of *highly visible* extraordinary objects, right before our eyes, that ordinarily escape our notice" (*ibid.*, p. 13, italics added). If this were the case, then it would be arguably difficult to say how and why we systematically have no experience of trogs, trout-turkeys, and nosetowers while having them hanging right before our eyes. But, unfortunately for Korman, this is not the case. Permissivism, in itself, has nothing to say about how visible extraordinary objects such as trogs and trout-turkeys are. This is a further assumption that would require independent motivation. As such, it is perfectly reasonable for Permissivists to *reject* the claim that extraordinary objects are visible in any meaningful way. In so doing, Permissivists can considerably weaken the original motivation behind (CX2)'s conservative defense. However, for the sake of argument, for now, we let Korman's argument unfold since this will give us the chance to critically assess some overlooked aspects of Permissivism and to engage with Conservatism in a wider-ranging way.

This, according to the debunker, effectively *undercuts* the accuracy of our pre-theoretical worldview and bolsters the idea that any conservative restriction in ontology should be rejected[8].

At first glance, the debunking rationale seems convincing – Korman himself admits that if successful, these arguments "threaten to undermine the only reasons one might have for being a Conservative in the first place" (*ibid.*, p. 3). However, Korman argues that when further elaborated, it backfires on the Permissivists, whereas the Conservatives have a special anti-debunking trump card to play.

Conservatives are by and large faithful to the ontological correctness of the manifest image of the world and, thus, are particularly interested in securing the ontological content of our perceptual beliefs. After all, "[p]erception is our key to the world", as Susanna Schellenberg puts it evocatively (2018, p. 1), and it is primarily through perception that we become aware of the external world and form justified beliefs about it.

Thus, Conservatives want our perceptual beliefs[9] to be accurate[10]. Korman, then, argues that if our perceptual beliefs are really to be accurate, there must be some *explanatory connection*[11] between those beliefs and what

---

[8]It is worth noting that debunking arguments are not, in any way, peculiar to Permissivism. In fact, Eliminativists often employ debunking arguments about our perceptual knowledge of ordinary objects to defend their desertic landscapes. Here, though, we will discuss debunking arguments exclusively as dialectical tools used by Permissivists to reach their goal against Conservatives.

[9]In this work, we will talk interchangeably of perceptual beliefs and perceptual experiences.

[10]At least under normal conditions, i.e. veridical conditions, i.e. conditions not vitiated by hallucination or delusion. Indeed, if it would turn out that even under normal conditions perception our perceptual experiences are not accurate, then it seems that we must be ready to face some sort of skepticism about the external world. Here, for reasons of space and scope, we have no interest in discussing these cases.

[11]Korman calls such connection also "alethic connection" and "world-to-mind connec-

those beliefs are about to the effect that the latter should explain why we hold the former. For instance, upon seeing a dog resting in the shade of a tree, we take there to be a dog and a tree. Such belief turns out accurate, presumably, *because* there are dogs and trees. Only when our perceptual beliefs are thus explanatorily connected, so the idea goes, we are (*prima facie*) justified in holding them.

Now, suppose that there are *causal-explanatory* connections between our perceptual beliefs and what they are about. Then, if we can say that we have perceptual beliefs about dogs and trees, rather than trogs, because there are dogs and trees, rather than trogs, causing our dog-and-tree experiences, then we can say to be (*prima facie*) justified in believing that there are dogs and trees, rather than trogs, when we have our dog-and-tree experiences.

If the Conservative can argue that such causal-explanatory connections are indeed necessary for us to be entitled to our perceptual beliefs and can argue that we have no perceptual beliefs about extraordinary objects because there are no extraordinary objects causing them, then the presence or absence of an explanatory ground for perceptual beliefs would lend support to some Conservative restriction of the ontology. Indeed, if beliefs about dogs and trees are causally explained by dogs and trees, but beliefs about trogs are not thus causally explained by trogs, then we could be *prima facie* justified in holding (CX2)-claims.

Permissivists, while accepting, in general, the accuracy of our ordinary perceptual beliefs[12], do not accept likewise that there are explanatory con-

_____

tion" to stress the fact that we want the world to explain why we have certain beliefs about it, not the other way round.

[12]Remember, Permissivists accept all of the ordinary ontology. They just add to that.

nections of the sort demanded by Korman. Indeed, more often than not, Permissivists maintain that *any* such explanatory connection would be the result of *accidental facts*, i.e. our contingent perceptual/conceptual endowment and sociolinguistic conventions, and would, thus, partition the ontological space merely in an anthropocentric and arbitrary way.

I call this the "no connection response" (e.g. Hawthorne 2006, Fairchild and Hawthorne 2018, Sider 2001). Proponents of this response, usually, hold that the accuracy of our perceptual beliefs is assured by modally robust overarching metaphysical principles[13] such as Unrestricted Composition, the doctrine of Plenitude, the argument from vagueness, and so on. Indeed, such principles can assign an object for any (consistent) way of partitioning the world perceptually and/or conceptually, with no appeal to our biological or sociolinguistic contingencies[14].

The no connection response is widespread. However, as I shall argue later on, Permissivists could – and should – opt for a more modest "weak connection response", according to which there *is* some causal-explanatory connection hinging our perceptual beliefs on what these beliefs are about, despite the fact that such connection is modally fragile and the fact that overarching metaphysical principles have the final say on the ontological fab-

---

[13]Modal robustness means metaphysically necessary or true in all possible worlds. I should clarify that I do not believe that most metaphysical principles are necessary. In fact, I think most metaphysical principles of the material world are contingent. In particular, I believe that Universalism is true in the actual world, but that each world might differ with respect to the compositional facts. And I also believe that naturalness facts are contingent. But the necessitarian view is standard and, here, there is no point in going against it.

[14]Perhaps, these Permissivists would be willing to say that overarching metaphysical principles non-causally explain our perceptual beliefs. A non-causal explanation, to use Lange's evocative phrase, provides a "because without a cause" (2016). This is worth further exploration in future research. See also Schaffer (2017) and Wilson (2018).

ric of the world.

For now, though, we are concerned only with the no connection response and its debunking rationale since it is against this sort of response that Korman's criticisms are directed.

Korman argues that the no-connection response does not work and that it backfires against the Permissivists. Thus, he rejects calls from Permissivism to defy (CX2)'s warrant. However, it is noteworthy that Korman, ultimately, accepts that certain debunking arguments are effective also against Conservatism and, thus, offers a new Conservative solution that can make (CX2)'s warrant safe.

I will present Korman's criticism as the *argument from authority*, the *argument from causal overdetermination*, and the *argument from fragility*. The first two arguments are directed against the Permissivists, while the third one against the naive Conservatives.

(The Argument from Authority): Permissivists want to reclaim the good standing of our perceptual knowledge of ordinary objects (cf. Fairchild and Hawthorne 2018). But if there is no explanatory connection between our perceptual beliefs about x and x, then our beliefs about x are unhinged and the "authority of experience" gets undercut. So, Permissivists cannot reclaim the good standing of our perceptual knowledge of ordinary objects[15].

---

[15]Note that the problem, here, is not the basic/default/non-inferential nature of perceptual justification. The Permissivist may easily accept some form of epistemological dogmatism in the vein of Huemer (2001) and Pryor (2000) and say that if it perceptually seems us as if p, we are *prima facie* justified to believe that p. The present problem is, rather, that even a dogmatic approach subsumes the "authority", or if you prefer, the "phenomenal force", of what perceptually seems to us – i.e. we are entitled to hold justified

(The Argument from Causal Overdetermination)[16]: Suppose that Permissivists accept the existence of some causal-explanatory connection between our perceptual beliefs about x and x. Accordingly, we are entitled to our perceptual beliefs about, say, dogs and trees because they are caused by dogs and trees, even though such experiences are contingent upon our perceptual or conceptual endowment and/or sociolinguistic conventions. Indeed, we *could have* perceived trogs and uptrees[17], rather than dogs and trees, had we had a different perceptual or conceptual endowment and/or sociolinguistic conventions. But this will not do since, in a permissive setting, causation can only be *deviant causation* to the effect that a perceptual belief about x is never really about x. That is, in a permissive setting, our perceptual beliefs about x would fail to genuinely causally depend on x. More precisely, suppose we have an experience E, say, of a dog and a tree located in a spacetime region

---

perceptual beliefs about p *because* it perceptually seems to us as if p. Korman's complaint is that if Permissivists sever the epistemic ties between perceptual beliefs and the source of perceptual evidence, there seems to be no good reason to take us to be entitled to hold accurate perceptual beliefs. After all, it is *not* perception that which makes those beliefs true!

[16]A clarification. First, this argument from causal overdetermination should not be confused with the one offered in Merricks (2001) for compositional nihilism whereby composite entities would be mere causal overdeterminers and, thus, should be rejected in favour of their microphysical constituents arranged such-and-such. Second, Korman does not explicitly appeal to any causal argument against Permissivism, but seems to implicitly foreshadow one. Thus, I decided to develop it on behalf of the Conservative both because it is an interesting argument in its own right and because it helps us spotting weaknesses in usual Permissivist strategies.

[17]Uptrees are not compositionally bizarre objects entailed by Unrestricted Composition, but objects with bizarre modal-occupational profiles entailed by material plenitude. Consider Korman's own words (2015, p. 93):

> An uptree is not simply a tree that is upright, because an upright tree doesn't cease to exist when it is uprooted and topples over. An uptree, by contrast, ceases to exist when it topples over, at which point a downtree, composed of the same atoms, comes into existence.

R and causing E. In this case, if the dog and the tree had *not* caused E, but there are trogs, uptrees, and whatnot located in R all causing E, we would still have had our E-experience because the specificity of E relies only on our biological and cultural contingencies – i.e. in the closest world in which we have an E-experience, but dogs and trees do not cause E, we still have an E-experience because of trogs, uptrees, and whatnot (in such a world, we have the same perceptual and conceptual endowment and sociolinguistic conventions). This happens because, in a permissive world, once we set aside our own perceptual, conceptual, and linguistic contingencies, our perceptual beliefs have multiple sufficient causes: namely, dogs, trees, trogs, uptrees, and whatnot. And all of them are *causally redundant.* Following Lewis (1986c) and Schaffer (2003b), say that redundant causation happens whenever there are multiple events $c_1, \ldots, c_n, e$ such that each of the c_i (with $1 \leq i \leq n$) without the other cs would cause e. Take two such overdetermining causes c_1 and c_2 and their effect e, and say that they are *symmetrically redundant* whenever c_1 and c_2 *symmetrically overdeterminate e,* that is whenever c_1 and c_2 are causally on a par with respect to e, i.e. both count as causes of e. So, recall our dog-and-tree experience. What would happen, in a permissive world, is that dogs, trees, trogs, uptrees, and so on, would all count as causes of our dog-and-tree experiences with no cause having enough causal force to stand out as the genuine causal process. Hence, in a permissive world, perceptual beliefs about x are never really *about* x for they never really depend on x, but x, y, z, w, and so on. If anything, they depend solely on our accidental

113

perceptual, conceptual, linguistic endowments thereby being always, in Korman's own words, "epistemically unstable" (2015, p. 99).

(The Argument From Fragility): Say that an explanatory connection is fragile iff it is contingent. Accurate perceptual beliefs should *not* be fragile because if they were, they would be *unsafe*, i.e. they could have easily been different in content. Unfortunately, if our perceptual beliefs are hinged on what they are about through some causal-explanatory connection, then they are fragile because even if they are about some x, they could have easily been about some other x^*. In other words, for any actual partition of our perceptual space, there is always a different possible partition of it where we are assigned extraordinary objects as the content of our perceptual beliefs. So, Conservatives cannot reclaim the good standing of our perceptual knowledge.

Before we move on to see Korman's own proposal and our permissive reply to such arguments, some considerations are due.

The Argument from Authority

Despite recent objections from Fairchild and Hawthorne (2018), I agree with Korman that "no connection Permissivists" end up undercutting the authority of experience. Fairchild and Hawthorne argue that a no connection response is appropriate because (i) explanatory connections, if there are any, are context-dependent and (ii) plausible notions of "explanatory connection" are so weak to be uninteresting. But I do not think this is any good. Indeed, I think their first contention is ineffective against Korman's perceptual case,

whereas their second is wrong.

Take the context-dependency issue. In this case, Fairchild and Hawthorne point out that certain "why-questions"[18] require explanatory information that has nothing to do with ontological matters. For instance, it seems that we might explain why we have beliefs about dogs rather than dogs* simply by appealing to extrinsic facts about a community's language use, rather than to intrinsic facts about dogs or dogs* – e.g. by pointing out that the word "dog" is used whenever there are dogs before the speaker's eyes, whereas that the word "dog*" is used whenever there are dogs *and* trees before the speaker's eyes. True, but this is hardly helpful here. Indeed, if we ask contrastively "Why, upon experiencing E, we have a dog rather than a trog experience?", it seems to me that we want information, among other things, about the perceiv*ed*, i.e. about *what* causes our experiences. So, in Korman's contested case, it seems to me that we are, after all, looking for intrinsic facts that could answer, *viz.* explain, our contrastive why-questions.

Regarding the second issue, Fairchild and Hawthorne point out that Korman demands a way too strong notion of "explanatory connection", a connection that provides its information necessarily. I agree. After all, if we follow Lewis (1986d), we may simply say that to explain something is "to provide some information about its causal history" (*ibid.*, p. 217). As far as I am concerned, we may very well be content with this sort of explanatory

---

[18]Why-questions, of course, are inquisitive phrases introduced with a why, e.g. "Why are you here?". Why-questions could also be *contrastive*, e.g. "Why are you here *rather than* there?". Sometimes, I will make use of this question-theoretic terminology to be more specific, but without going into nitpicking technicalities. For more see Lewis (1986d), Lipton (1990), Temple (1988), Skow (2016), and Van Fraassen (1980).

information, contingent as it may be[19].

However, Fairchild and Hawthorne claim that a Lewisan notion of explanatory connection would be so weak to be uninteresting (2018, p. 53). I respectfully disagree. Indeed, a "Lewisian explanatory connection" would tell us that our why-questions, in order to be answered, need causal information on their subject matters. This is not trivial nor uninteresting. In fact, I will show that Structured Universalism is especially suited to employ such a notion of explanatory connection. As we shall see later on, Structured Universalists, when asked "Why, upon experiencing E, we have a dog rather than a trog experience?", can successfully make use of a Lewisian notion of "explanatory connection" to answer "Upon experiencing E, we have a dog rather than a trog experience because dogs, but not trogs, have causal powers and, thus, can be responsible for our perceptual experiences". This seems interesting enough, even if contingent[20].

Thus, all in all, I agree with Korman that if we opt for the no connection proposal suggested by Fairchild and Hawthorne, we have no choice but to leave our perceptual beliefs undercut. True, they maintain that what justifies our ordinary ontological beliefs about which objects there are can only be overarching metaphysical principles, e.g. Unrestricted Composition or Material Plenitude. But I do not think this is correct.

As Hofweber (2016, Ch. 7) has rightly argued, if we accept the good standing of our perceptual beliefs – and, remember, this is something that

---

[19]As we will see below, Korman disregards a solution in this vein since he does not want to accept the fragility of our perceptual beliefs. As it will be clearer soon this is a cure worse than the illness itself.

[20]Perhaps, in another world, trogs have causal powers too.

all Permissivists, Fairchild and Hawthorne included – we seemingly accept the good standing of their evidential source, i.e. perception! Then, and only then, we may advance overarching metaphysical principles to further higher-order evidence for or against that evidence. Thus, for the Permissivists, reaching some reflective equilibrium between perceptual evidence and their principles of composition seems a wiser move than severing the ties completely. Thus, I agree that some (weak) explanatory connection is needed.

Overall, I take the argument from authority to be successful against usual forms of Permissivism. Though, this does not mean victory for Conservatism. In fact, as I will show, Structured Universalism can effectively defy it.

The Argument from Causal Overdetermination

I think the argument from causal overdetermination shows how problematic can be into the interplay between Permissivism and causation. In particular, it shows how an abundance of material objects, *all* causally efficient, can jeopardize the correct understanding of causal processes and their relevance for the phenomenology of our experiences. If Permissivists want to defy the challenge posed by the argument, they have to say more about the natures of extraordinary objects, i.e. which properties they have and which properties they do not have. Indeed, these objects, as I see it, should turn out nomologically otiose and, thus, may not have any casual power after all[21].

---

[21]Note that I have framed the argument in terms of the *counterfactual theory of causation* (cf. Lewis 1986c, 2000), but nothing turns particularly on this (in fact, overdetermination is a problem for other theories of causation as well, see Schaffer 2003b). I have decided to resort to the counterfactual theory of causation because it nicely captures the point at issue and Korman's own phrasing of it.

The Argument from Fragility

Regarding the argument from fragility[22], we have already hinted at the problem: the relevant notion of "explanatory connection".

We have said that a weak Lewsian notion of it in terms of causal information could suffice for our purposes. However, Korman disagrees because he thinks that without a strong explanatory connection our defeasible perceptual entitlement gets defeated. It is unclear, though, why Korman thinks so.

Indeed, as Hofweber (2019, pp. 27ff) has correctly noted, in securing entitlement to our perceptual beliefs, we should not be interested in the fragility of the belief-forming mechanism, but rather in its reliability, or if you want, its aptness[23]. Accordingly, if we can say that we are *prima facie* entitled to our perceptual beliefs because, suppose, we can say we have formed those beliefs reliably, knowing that we could have ended up with different perceptual beliefs does not defeat our defeasible entitlement. Consider Hofweber's own insightful words (*ibid.*, pp. 40-41):

> Our concepts are the result of our interacting with the world, and even though they clearly could have been different, that does not mean that they were selected either at random or for no reason connected to what they aim to represent. The opposite seems to be true: the concepts were put in our heads in part by interacting with the world they aim to represent, through a

---

[22]Remember, this is the debunking argument Korman accepts against Conservatism.

[23]See Pritchard (2005, 2007, 2018), Lyon (2009), Sosa (2000) and Williamson (2000) for further details on some of these themes.

complex and very long process that resulted in the shaping of our minds in the evolution of our species. True enough, it could have gone differently, but this does not mean that learning how it in fact went undercuts our entitlement. [...] We don't just find the concepts we employ in us for a reason completely unrelated to what we aim to represent with them. Even though the causal process could have ended differently, this does not mean that we should recognize that the way it did go is arbitrary or unrelated to what we hope to represent. And only the latter would defeat our entitlement. The former leaves it intact [.]

For instance, presumably, we are defeasibly justified in believing that there is a dog before our eyes when we see it because we formed our dog-belief through reliable mechanisms, e.g. properly functioning visual apparatus, veridical conditions, effective causation, and so forth. This guarantees, for all we know, that the right match between the perceiver and the perceived took place. This is a clearly contingent fact, but it seems irrelevant to its epistemic stability.

All that being understood, we will not come back to the argument from fragility again since we are interested in defending Permissivism, not Conservatism. Moreover, our next discussion will make our position clear on related issues.

2.3 Korman's Solution, or A Paradise for Conservatives?

Given his criticism, Korman draws the conclusion that Permissivism is doomed, while that Conservatism can be saved with a special trump card. Korman's anti-debunking definitive solution goes as follows:

(Apprehensionalism): When a subject S has a perceptual experience E, she apprehends "CCK facts" about E, i.e. facts about composition, (co-)instantiation, and kindhood involved in E.

Apprehension is a rational, i.e. a priori, faculty that we possess and that allows us to *directly*, *necessarily*, and *non-deviantly* grasp some metaphysical facts about the structure of the world.

For instance, suppose, once again, that we are having an experience E of a dog resting in the shade of a tree. According to Korman, while going through E, we end up with justified true beliefs about there being a dog and a tree *because* we rationally apprehend (i) that dogs and trees are two objects that do not compose any trog; (ii) that "dog-qualities" and "tree-qualities" can be instantiated by unified, non-scattered objects; and (iii) that the objects instantiating dog- and tree-qualities can only belong to DOG and TREE kinds.

Given the CCK facts that we rationally apprehend, note, it is *impossible* for us to have dog-and-tree experiences without there being just dogs and trees causing it. Thus, our perceptual knowledge of the world is safe.

Thus, by apprehending the CCK facts, Conservatives can rebut debunking qualms from the Permissivists, fix the Conservative reply, explain our

perceptual experiences, and support (CX2)-claims.

I say that Korman's proposal is too good to be true. In fact, I am tempted to regard Korman's theory as *ad hoc*. Indeed, the postulation of a rational faculty seems simply to serve the purpose of saving the Conservative from failure and avoiding confrontation with the challenge at stake while it has no independent plausibility nor clear theoretical support. In fact, apprehension seems to work, *mutatis mutandis*, much like the aether in pre-relativistic physics: a specific assumption that has enough utility just to avoid theoretical failure.

But suppose I am wrong and Korman's theory is not thus *ad hoc*. Even so, little advancement is done.

As part of established and well-understood theoretical practice, I take it that when one introduces a new notion for a new theoretical entity, she must provide some good reason why that notion is, in some sense or another, indispensable to the progress of our theorizing. The new notion can be taken as a primitive, i.e. an unanalyzed notion of our theory, e.g. "knowledge"(Williamson 2000) and "naturalness" (Lewis 1983), 1984), or as an unfamiliar posit that elicits incredulous stares, e.g. "Lewisian possible worlds" (Lewis 1986a). Be as it may, the new notion has to be, among other things, *fruitful* and *cognitively salient*. That is, the new notion should increase our theory's explanatory power by making it more predictively powerful, more unified, less elusive, and non-*ad hoc* (cf. Keas 2017, Ylikoski and Kuorikoski 2010).

It is admittedly hard to say how Korman's rational apprehension satisfies these *desiderata*. First, as Korman himself admits (2015, §6.2), he has no clear idea about what apprehension is or how it does what it does. Thus,

121

apprehension is elusive. Then, as we said, it has no independent support or plausibility. Thus, it seems *ad hoc*. And it leaves all sorts of questions open: "What does it mean that we can directly grasp the metaphysical facts?", "How is it any different from knowing the facts?", "Does apprehension give us foundationalist epistemic justification along the lines of Huemer's phenomenal Conservatism such that if it seems to us as if p, then we are *prima facie* justified in believing that p? But, then, why do we need apprehension over and above intellectual seemings?", "In which sense apprehension gives our perceptual beliefs such a modal strength that they could not have been different?". Thus, it does not further unification.

Finally, we should note that Korman defends his theoretical posit by means of an *abductive inference*, i.e. inference to the best explanation. The suggestion, then, would be that we are justified in believing in apprehension because apprehension best explains facts about our experiences. This is hardly an improvement, but I want to say a few words on this.

As Hintikka (1998) points out, among others, abductive inferences should be understood as "strategic ampliative inferences". "Strategic" in the sense that they provide answers for questions, e.g. "Why do we perceive dogs rather than trogs?", and "ampliative" in the sense that they bring new information to the table. This new information, though, should not just be some new piece of information, but rather a new piece of *projectible*[24] information. That is, a new piece of information that allows us to project strong hypotheses, i.e. hypotheses that are, among other things, fruitful and cognitively salient. So, we are back to our previous point. Abduction can do little, here, to justify

---

[24]See Goodman 1954, p. 108).

122

Korman's apprehensionalism.

I think this is enough to discredit the epistemic good-standing of apprehensionalism. Before we move on and see our Permissivist reply, though, I would like to address a more general worry about Conservatism. That is, whether conservatism can really deliver on their Conservative promises, especially in the face of vagueness.

2.3.1 Is Conservatism Conservative After All?

Korman (2015, Ch. 9) makes it clear that he believes that composition is restricted and, thus, that he favors an ontology that accepts existential as well as compositional vagueness. In other words, he accepts the lesson of The Lewis-Sider argument from vagueness and bites the bullet. Thus, for Korman, the world contains metaphysical indeterminacy[25].

In what follows, I will argue that biting the indeterminate bullet can be costly for the Conservative. Indeed, it could end up shaking the very grounds on which Conservatism rests.

Suppose that composition is restricted and vague. Consider, then, the case of two soldering pieces of metal m_1 and m_2 (Torza 2008). We want to say that at some point of subatomic interaction, m_1 and m_2 will compose a further object m_3, while at others do not. Take $\delta(x, y)$ to be a distance function that for any two material objects, tells you how distant they are. For *some* value of $\delta(m_1, m_2)$, m_1 and m_2 will indeed compose m_3. But which one? The answer seems indeterminate. And yet, there will be cases where it is *perceptually indiscriminable* whether m_3 exists or m_1 and m_2 are merely

---

[25]Here, I will not distinguish between vagueness and indeterminacy.

adjacent. Thus, there will be cases where it seems to us as if m_3 exists, but it is indeterminate whether this is really the case.

In these scenarios, Conservatives should say that we have epistemically determinate experiences of metaphysically indeterminate facts because Conservatives want their perceptual experiences to be accurate and, thus, indeterminacy should not be in the perceiving relation[26]. If so, I say a choice of evils ensues: either the authority of experience gets undercut or the objects of ordinary experience are extravagant/unfamiliar, i.e. not ontologically conservative.

Let us begin by saying what determinate experiences of indeterminate facts are. We could follow Akiba (2000, 2004), Barnes (2010), and Williams (2008b) and say that a fact x in our world α is metaphysically indeterminate iff there are worlds w and w^* compatible with α's ongoings, but such that it determinately obtains in w, while it does not obtain determinately in w^*. Thus, it is indeterminate whether α should be determinately represented as w or as w^* (w and w^* are ontic precisifications of α).

If this is right, then our experiences cannot be as accurate as Conservatives want them to be, not even to a considerable extent. In fact, even if it perceptually seems to us as if there is an object m_1 and m_2 compose, we *cannot* say whether our own world should be correctly represented as including an object composed out of m_1 and m_2 or not. But this, as I take it, does not allow our perceptual beliefs to be explanatorily connected to the object facts accurately. In fact, our perceptual beliefs get trumped and undercut

---

[26]Moreover, if the indeterminacy would be proper of the perceiving relation, then the indeterminacy would be representational, not metaphysical.

by the metaphysical indeterminacy present in the object facts. So, if we are Conservative, our experiences cannot be accurate[27].

Perhaps, though, this is not what Conservatives have in mind when they talk of metaphysical indeterminacy. Indeed, maybe, they say that we have determinate and accurate experiences of objects in the world. What is metaphysically indeterminate is rather the metaphysical structure of objects in the world.

An analysis of such structure could follow Akiba (2004) and would argue that ordinary material objects are *5Dimensional transworld fusions* of spatial, temporal, and *modal* parts. That is, ordinary material objects are the fusions of all their precisificational profiles, each of which exists in some possible world, and each of which overlaps with the other. Every (worldly) precisification is determinate and slightly different from the other precisifications. As a consequence, despite their determinate precisifications, objects are metaphysically indeterminate. So, if Akiba is right, ordinary objects are 5Dimensional transworld objects. Not a very Conservative outcome.

Another analysis would follow Lowe (2016), instead, and would argue that ordinary material objects are some sort of *non-individuals*, i.e. objects which lack structural unity or determinate identity e.g. entangled quantum particles, biological entities such as molds, and complex numbers. This would not only be quite revisionary a move, but it would also seemingly get the facts

---

[27]Moreover, this is problematic also for perception-based *singular thought* or *reference*, i.e. thoughts/referential reports that are directly about a single object. In fact, once metaphysical indeterminacy is on board, we should have vague perceptual thoughts about multiple objects - each ontic precisification of me perceiving a precisification of a dog is precisely and directly about a single object but there is no way to know which object our perceptions are about.

wrong. Indeed, as Lowe himself points out, ordinary material objects should be treated as genuine *individuals* because they possess structural unity and a determinate identity.

Other analyses still could follow Hosseini and Abnaszehad (2014) or Sattig (2015) and would say, respectively, that ordinary material objects are *structurally incomplete* objects that can be made precise in many different ways through precisifications, or possess many different *Aristotelian Forms* all superimposed. Be as it may, it is far from clear that these views would do any better in supporting the cause of a Conservative ontology.

Let us take stock. Conservatism wants to uphold an ontology respectful of our manifest image and, thus, is posed to accept metaphysical indeterminacy, i.e. existential and compositional. At the same time, it wants to secure the correctness of our ontological beliefs, especially by hinging them on the evidential accuracy of our perceptual knowledge. We have found out that Conservatives cannot have all the nice things. Either metaphysical indeterminacy trumps the accuracy of our perceptual experiences or it makes ordinary objects much less familiar than Conservatives may like.

2.4 A Permissive Purgatory

In this section, we present our Permissivist proposal. We assume Structured Universalism on the background and see how our abundant ontology equipped with an objective discrimination between natural and unnatural wholes can solve Korman's Challenge.

2.4.1 Perceiving in a Permissive World

Despite all the hesitations one might have about Korman's Conservatism, I think that Permissivists should say more about extraordinary objects and their natures. Indeed, the idea that there are "there are swathes of highly visible extraordinary objects, right before our eyes, that ordinarily escape our notice" (2015, p. 13) is disturbing enough to discredit *prima facie* Permissivism.

I agree with Korman that Permissivists have done too little to clarify their position on the perceptual and causal status of gerrymandered objects. Permissivism about composition, though, is *not* the thesis that "there are swathes of highly visible extraordinary objects, right before our eyes, that ordinarily escape our notice" (*ibid.*). It is rather, and more simply, the thesis that for any objects whatsoever, there is a whole composed out of them. End of the story. If we want to say something about, e.g. the perceptual and/or causal nature of these objects, we have to argue for it independently.

As we know, we accept a metaphysically meaningful distinction between natural and unnatural wholes. The former are those wholes that are structurally robust and nomologically relevant, whereas the latter are those wholes that are structurally nonrobust and nomologically otiose.

With this distinction, I will show how Permissivists can develop a theory of *perceptual magnetism* that can effectively meet all the challenges raised by Korman.

Perceptual Magnets

Perception does play a crucial role in forming some of our ontological beliefs. No doubt. For instance, we believe that there are dogs and trees because dogs and trees are perceiv*able*, i.e. because all the worlds compatible with the actual content of our dogwise and treewise perceptual experiences are worlds where there are dogs and trees before us (or some other perceiver). Usually, we do so by perceptually organizing what we see: we individuate ordinary material objects by identifying certain geometrical and topological qualities thereof (e.g. cohesion, 3D-shapes, boundedness, continuity), by discriminating them from their surrounding, and by noticing a certain structural intimacy between their parts (e.g. spatiotemporal relatedness, causal connection, visual resemblance, kinematic resemblance).

Now, I would like to use the expressive resources of my universalism to advance the following principle and related definitions:

(Perceptual Magnetism Principle): The objects that can serve as the content of our perceptual experience are all and only those objects that exert *perceptual magnetism*.

(Perceptual Magnet): An object x is a perceptual magnet/exerts perceptual magnetism iff x is *perceptually eligible* to be represented as the content of our perceptual beliefs.

(Perceptual Eligibility/Ineligibility): An object x is perceptually eligible iff x is *perceptually natural*; otherwise, x is perceptually ineligible iff x is *perceptually unnatural*.

128

Perceptually natural objects are all those natural objects that are robust enough and nomologically relevant enough to play a role in our perceptual experience, while perceptually unnatural objects are all those unnatural objects that are nonrobust enough and nomologically otiose enough to not play any such role. Clearly, dogs, trees, and all the other ordinary objects fall within the first group, while trout-turkeys, trogs, and all the other extraordinary objects fall within the second one.

Thus, once we accept this, universalism is no longer the thesis that arbitrary fusions are highly visible macroscopic objects that escape our notice. Arbitrary fusions are not visible at all! We fail to notice them because they *cannot*[28] be the content of our perceptual beliefs.

2.4.2 Intuitions from a Revionary Standpoint

Korman thinks that intuitions are defeasible contentful intellectual seemings. By informing us *a priori* that there are no trogs, they reinforce our perceptual evidence and, thus, bring support to Conservative approaches in metaphysics.

However, we have significantly hindered Korman's Conservatism by spelling out that gerrymandered objects are unnatural wholes, which are not highly visible yet unseen objects, but rather, intrinsically unsuited to be represented as the content of our perceptual experiences. This defeats our intuitions.

On a more general note, it is difficult to see what sort of methodological advantage intuitions would bring to the cause of Conservatism. After all, it is commonplace in scientific reasoning to override our intuitions in the face of

---

[28]The modal locution here should be understood as restricted to perceptually compatible worlds, that is to worlds where perceptual experiences are compatible with those of our actual world.

newer and superior evidence, or to revise our intuitions so as to accommodate newer and superior evidence. Thus, in general, in serious theorizing we *train* our intuitions to the effect that when new and superior evidence E is offered in favour of a new and, maybe, counterintuitive hypothesis h, we undercut the past evidence E^* that brought us to believe the previous hypothesis h^*.

For instance, it is counterintuitive to believe that spacetime is Minkowskian rather than Newtonian, i.e. a 4D manifold rather than a 3D absolute space + 1D absolute time; that two objects of different weights can reach the ground at the same time; that the Earth spins and orbits around the Sun; that the present image of some stellar objects can actually be thousand years old; that the Unrestricted Comprehension does not hold; or that there are uncountable sets of numbers. Counterintuitive and yet true.

The case with Permissivism is similar. Indeed, as in other scientific enterprises, universalism starts from "local" agreement with commonsense but ends up with "global" disagreement with it. This global disagreement concerns the postulation of extraordinary, unnatural objects. And these objects, which are certainly counterintuitive, are posited when further superior evidence suggests that our ordinary intuitions about the world may be overly naive or simply wrong: the Lewis-Sider argument from vagueness, arbitrariness consideration, reflective equilibrium with science, and other theoretical virtues (e.g. explanatory power, economy, fruitfulness, and unity) count all as evidence against the ordinary, or rather against our inclination in making the ordinary the only rightful image of the world.

Korman disagrees, perhaps because he is afraid of losing the world as we

know it in favour of "crazy metaphysics"[29] and "mereological madness"[30]. But such concerns are unmotivated. Indeed, abandoning the immediacy and intuitiveness of the manifest image is a cost sometimes we must pay for the sake of theoretical progress. Rejecting this fact would make Conservatism reactionary rather than Conservative.

2.5 Permissivism Strikes Back

2.5.1 The Arguments From Counterexamples Defied

The Permissivist is now in a position to defy Korman's contentions and to present a better solution than his apprehensionalism.

The Arguments from Counterexample. We saw that most of Korman's defensive strategy revolves around the argument from counterexample by means of which he aims at defending (CX2)-claims, e.g. "There are no trogs", by appealing to ordinary intuitions and perception. Now, on the basis of what we have seen, we are in the position to deflate the challenge of the arguments from counterexample. (CX2)-claims are supposed to be supported by the absence of perceptual evidence and our ordinary intuitions. First, we saw that compositionally gruesome objects are perceptually unnatural, thus ineligible to play any role as perceptual content of our perceptual beliefs. For this reason, *contra* Korman, trogs and trout-turkeys do not escape our notice despite being highly visible, but, in fact, because they are not visible at all! Thus, the perceptual challenge has no bite as it has no bite challenging the

---

[29]The expression is from Judith Jarvis Thomson (1983).

[30]The expression is from Ned Markosian (2014).

physicist by saying that we do not see invisible-light spectrum objects. As per the intuition challenge, we say that those intuitions are overridden by superior evidence in favour of extraordinary objects. However, as we shall say later on, ordinary beliefs against extraordinary objects may be reasonable to hold even if they are false.

2.5.2 Debunking Worries Defied

(The Argument from Authority Defied): We have conceded this point to Korman: on pain of undercutting the authority of experience, some explanatory connection between experience and our beliefs must be in place. But to respect the authority of experience, mysterious rational insights are not needed. As we have seen, a weaker notion of "explanatory connection" like the one proposed in Lewis (1986d) - to explain x means to provide some information about x's causal history - fits our purpose as well. Now, SU is well-positioned to answer our plain why-question "Why, when we have, say, a dogwise and treewise experience, we have perceptual beliefs about dogs and trees?" – Answer: "Because dogs and trees cause our dogwise and treewise experiences" - and our contrastive why-question "Why, when we have a dogwise and treewise experience, we have perceptual beliefs about dogs and trees rather than trogs?" – Answer: "Because dogs and trees, not trogs, are perceptually natural wholes and can cause our dogwise and treewise experience". Contingent as it may be, this information is explanatorily enough. The authority of experience is preserved.

(The Argument from Causal Overdetermination Defied). If Permissivists embrace Structured Universalism, they have a nice way out of Korman's causal predicament. In a SU setting, it is not true that *all* composites are causally effective and, hence, it is not true that our dogwise and treewise experience would be caused indifferently by dogs, trees, trogs, and uptress. In other words, in a SU setting, it is not true that our experiences are systematically overdetermined by a plethora of material objects, ordinary and extraordinary. The reason is now clear: by the Perceptual Magnetism Principle, only natural wholes are nomologically relevant and, thus, are causally efficacious. So, only dogs and trees can be held responsible for our dogwise and treewise experiences – had they not caused those experiences, nothing would have. Presumably, in all (nomologically?) possible worlds, our dogwise, treewise, mountainwise, carwise, and so on, experiences are caused by dogs, trees, mountains, and cars, and nothing else.

2.5.3 What the Folks Believe

We have defied Korman's Challenge. However, that does not mean that our Permissivism will not conflict with ordinary thinking. We said already, in Chapter 1, that Permissivists should not be compatibilists but incompatibilists. That is, Permissivists should accept that their conflict with ordinary thinking is genuine.

Our considerations, here, will overlap considerably with the previous one in Chapter 1, so we will try to avoid unnecessary repetition.

Structured Universalism can adopt the following incompatibilist strategy. Say that a false ontological folk belief about x is reasonable to hold/correct iff it is nearly as good as true. And say that a false ontological folk belief about x is nearly as good as true iff x is a perceptually unnatural whole[31].

In ordinary contexts, then, it is excusable to hold false (CX2)-beliefs such as "There are no trogs" because trogs are perceptually unnatural and, thus, defy the main evidential source of our ordinary experiences. This together with the fact that, in ordinary contexts, we do not consider the reasons why our ontology would benefit from accepting unnatural objects and why excluding unnatural objects would be objectionably arbitrary, explains why (CX2)-false beliefs are reasonable to hold *in ordinary contexts.*

All in all, SU provides a credible incompatibilism that does without dubious folk psychological hypotheses, or perceptual luck, or bizarre stories about how we would ordinarily fail to see what we have right in front of our eyes – in fact, as we have said, nothing unnatural is right in front of our eyes.

---

[31]Things may differ depending on the preferred conception of naturalness. For instance, if we are more inclined toward a gradable Lewisian understanding of objectual naturalness, then we may phrase our folk theory as follows: the more perceptually unnatural an object is, the less likely we are of forming beliefs involving that object; on the contrary, the more perceptually natural an object is, the more likely we are of forming beliefs about that object. Of course, in this case, the gradable ordering is defined over a subclass of the natural objects, i.e. those that are involved in our perceptual experiences. On the other hand, if we are more inclined toward a non-gradable Schafferian understanding of objectual naturalness, then we should phrase our folk theory as follows: if an object is perceptually natural, then we are inclined to form beliefs about it; if, on the other hand, an object is perceptually unnatural, we are not inclined to form beliefs about it. Under this conception, it seems as if perceptual magnetism ceases to be exerted once we enter the unnatural realm.

2.6   Concluding Remarks, or Of Metaphysical Knives and Nature's Joints

Korman, by citing the words of Cook Ting the butcher, criticizes Permissivism as "reckless ontological hacking" through nature's joints (2015, p. 159) and as a view that illicitly "treat[s] all animals alike" (*ibid..*, p. 158). For Korman, permissive metaphysical knives fail to appreciate how nature's joints are varied and "less cut and dry" (*ibid..*, p. 159). Conservatives, on the other hand, being less ontologically reckless, prove to be better metaphysical butchers.

This may be true of standard forms of Permissivism, but it is false of SU. Our theory, indeed, draws metaphysically meaningful distinctions among objects while treating them all alike from an ontological point of view. We discriminate their natures, not their being. And this gives us a very powerful yet very sensible metaphysics.

Overall, SU successfully defies Korman's contentions. Moreover, it offers a better and more appealing solution than Korman's apprehensionalism since it avoids (i) any reliance on mysterious and underdeveloped theories of rational insight, and (ii) threats of *ad hocery* by working within a better developed and better understood theoretical framework. SU does all this while advancing a Permissive metaphysics of the material world, which, in a way, more receptive to the needs of our manifest image. Thus, I claim, *contra* Korman, that Permissivists do have sharp metaphysical knives but their cutting is careful and refined.

2.7 Koslicki's Challenge

In her paper "Mereological Sums and Singular Terms" (2014), Koslicki argues that a Lewisian Permissive ontology of wholes has deviant semantic consequences. In particular, that such ontology is ill-suited to make sense of our use of singular reference. For Koslicki, not even the adoption of naturalness can save the Permissive Lewisian. On the other hand, Conservatives have a ready solution.

2.7.1 Singular Terms and Their Use

Koslicki argues that *singular terms*, e.g. "Bruce the cat" or "Milo the dog", are used so as to single out a particular *well-demarcated*[32] *object*[33].

Accordingly, when we use singular terms such as "Bruce the cat" and "Milo the dog", we thereby refer, respectively, to a particular well-demarcated cat and a particular well-demarcated dog: namely, Bruce the cat and Milo the dog.

Then, in agreement with Evans (1975), Koslicki states that well-demarcated objects play a role in defying (or rather weakening) Quinean indeterminacy

---

[32]With "well-demarcated" we mean "having well-demarcated boundaries".

[33]She adds that singular reference respects some *Strawsonian constraints* for stable and shared communication about particular well-demarcated objects:

(Stability): A singular term t allows for continued reference over time of a particular object even in the face of changes in the object referred to or in the speakers referring to it.

(Sharing): A singular term t allows for the communication of interesting information about a given object among the members of a linguistic community.

Koslicki understands these Strawsonian constraints to be characteristic of our common practice of singular terms. However, these constraints play a minor role in Koslicki's Challenge, so we will ignore them hereinafter.

of reference and in accounting for the correct assent-behaviour of speakers when they use certain expressions, e.g. singular terms.

Indeed, as it is well-known, according to Quine, it is indeterminate whether expressions such as "cat" or "dog" divide their reference over well-demarcated enduring wholes, or over instantaneous stages of those wholes, or over undetached parts thereof. The reason is that, apparently, the stimulus that would prompt assent to "cat" or "dog" *underdetermines* reference, i.e. is compatible with different referential assignments[34].

However, Evans (*ibid.*) says that when we consider fragments of our language involving singular reference to ordinary material objects and predication, e.g. "That cat is black", speakers are not ready to assent to all the interpretative situations envisioned by Quine. In fact, it appears that speakers are ready to assent under more stringent conditions.

For instance, suppose that some speakers were asked "Black cats?" in the vicinity of several contiguous white cats with black tails[35]. Presumably, in such a situation, speakers would *not* assent because white cats with black

---

[34]The original example from Quine is very famous and it involves discussion of the "gavagai", i.e. presumably "rabbit" in a completely different language, and its possible translation (1960, pp. 51-52):

> For, consider 'gavagai'. Who knows but what the objects to which this term applies are not rabbits after all, but mere stages, or brief temporal segments, of rabbits? In either event the stimulus situations that prompt assent to 'Gavagai' would be the same as for 'Rabbit'. Or perhaps the objects to which 'gavagai' applies are all and sundry undetached parts of rabbits; again the stimulus meaning would register no difference. When from the sameness of stimulus meanings of 'Gavagai' and 'Rabbit' the linguist leaps to the conclusion that a gavagai is a whole enduring rabbit, he is just taking for granted that the native is enough like us to have a brief general term for rabbits and no brief general term for rabbit stages or parts.

For more details on this consider Williams (2008a).

[35]This is, basically, Evans' example under a new guise. Indeed, he talks of brown rabbits with white tails. See Evans (*ibid.*) for more details on Evans' own original example.

tails are not black cats. Still, in this scenario, there are black undetached cat-parts. Hence, speakers are not ready to divide their reference equally over black cats or over black undetached cat-parts.

Now suppose that the same speakers would be asked the same question, i.e. "Black cats?", but this time, in the vicinity of some black cats, i.e. black enduring ordinary wholes with whiskers, fur, and so on. In such a case, presumably, speakers would be ready to assent because they would be ready to divide their reference over black cats.

The general lesson Evans draws is that we are sensitive to the structure of objects and their configuration. In particular, it seems that when we predicate certain qualities of ordinary material objects, we expect these qualities to be particularly distributed within genuinely demarcated boundaries.

Koslicki agrees with Evans and goes on to argue that Lewisian Permissivists are ill-suited to account for these facts about reference and, especially, for objects with well-demarcated boundaries. On the other hand, Conservatives are well-suited to account for both.

2.7.2 When Ontology Abounds, Problems Abound Too

Lewisians account for well-demarcated objects by resorting to naturalness. Lewis (1983, pp. 48-49), for example, argues that Bruce the cat, i.e. a well-demarcated domestic cat, is more eligible as a referent[36] than the chunk of miscellaneous feline matter that follows him because Bruce, but not the chunk, instantiates (more) natural properties.

Usually, Lewisians defy Quinean indeterminacy by appealing to reference

---

[36]In fact, it is a *highly* eligible referent.

magnetism. That is, other things being equal, the intended interpretation should be eligible, i.e. should assign to our expressions eligible referents. Accordingly, Lewisians would say, indeed, that the referents of "black cat" or of "Bruce the cat" should not be undetached cat-parts or miscellaneous mass of feline tissue for this are ineligible referents. The eligible referents for "black cat" and "Bruce the cat" are, in both cases, well-demarcated cats.

So, overall, it seems that Lewisian Permissivists do agree with Evans on singular reference and on the importance of objects with genuine boundaries. Koslicki accepts this, but only partially. Indeed, she offers the following three objections against Lewisian Permissivists[37]:

(The Argument from Domain Division)[38]: The Lewisian domain is profligate and, thus, abounds of all sorts of wholes. Because of that, it requires a principled distinction between eligible and ineligible referents so as

---

[37]Note that Koslicki does not propose her objections in the form of full-fledged arguments. Moreover, she never talks of "argument from domain division", "argument from impotence", and "argument from indeterminacy". So, I have decided to develop them on behalf of Koslicki. In any case, the gist of these arguments is more or less explicitly mentioned by Koslicki herself.

[38]Consider her words (2014, pp, 225-226):

> For Evans, [...], the domain itself, over which the singular and general terms of the language range, already comes pre-divided, so to speak, into highly eligible referents. [...] [T]he question of how our singular terms successfully manage to pick out the highly eligible referents from among all the possible referents is not even worth asking unless the domain over which our singular terms and general terms range is construed in such a way that it contains ineligible or less highly eligible referents alongside the highly eligible ones. If such gerrymandered objects never make it into the domain over which our singular and general terms range to begin with [...], then the need for a distinction between eligible and ineligible referents vanishes and, with it, the need to account for the observation that speakers tend to ignore the ineligible or less highly eligible referents in their ordinary discourse. We should thus count it as among the advantages of the type of approach to reference endorsed by Evans over that endorsed by Lewis that such an approach does not need to settle the question of how to distinguish the highly eligible from the less highly eligible referents.

to account for those objects that can serve as referents for our terms and those that cannot. Moreover, the Lewisian domain is unstructured and, thus, needs natural properties making for a subsequent division into eligible and ineligible referents. On the other hand, the Evansian domain[39] is much less profligate and comes pre-divided into highly eligible referents. So, it does not require any further division. Moreover, the Evansian domain is structured and, thus, does not need properties to make for distinctions between eligible and ineligible referents.

(The Argument from Impotence)[40]: Objects, for Lewisians, are not natural in virtue of their intrinsic natures, but are natural in virtue of instantiating natural properties. Thus, objects, for Lewisians, owe their well-demarcated boundaries to differences in in the distribution of highly natural properties rather than to their own internal structure. For Conservatives, on the other hand, objects come "equipped" with a specific structure.

(The Argument from Indeterminacy): The Lewisian ontology is so profligate that falls prey to a sort of indeterminacy that not even naturalness can

---

[39]Koslicki uses Evans as the Conservative champion. So, it should be understood as standing in for all those that adhere to a Conservative ontology.

[40]Consider Koslicki's own words (2014, pp. 226-227):

> [I]ntrinsic eligibility, is supposed to trace some of the content-determining powers of our language to the intrinsic nature of the referent itself. But now, given Lewis's acceptance of standard mereology, we know that the referent itself, on Lewis's conception, does not have the power to do this work on its own: rather, the work of providing highly eligible referents with well-demarcated boundaries must be accomplished by a different piece of apparatus, the natural/non-natural distinction, whose primary target is properties and predicate-meanings and which, if successful, yields distinctions among objects and singular terms only derivatively.

cure. Indeed, as Lewis says (1993a), Bruce the cat is never really alone. In fact, there are countless of aggregates of cat-particles that differ from one another only negligibly, e.g. the aggregate of cat-particles minus atom a_1; the aggregate of cat-particles minus a different atom a_2; and so on. All these massively overlapping cat-aggregates are enough cats to be cat-candidates. In effect, Lewis says that all of them are so similar to be all cats! Thus, for Lewis, Bruce is really a crowd. The cats are *many but almost one*. If so, then it is indeterminate whether the singular term "Bruce the cat" divides its reference over the almost-cat_1, or over almost-cat_2, or over almost-cat_3, and so on. Moreover, none of the almost-cats stand out as the highly eligible referent for "Bruce the cat" for they differ so minutely to count pretty much all as equally natural. Thus, Lewisian Permissivists have no solution to indeterminacy of reference, after all. Evansian Conservatives, on the other hand, have no such problem for their ontology has no almost-cats to deal with.

I think that none of Koslicki's objections is successful. Or rather, let us say that they could be more successful against standard Lewisians, but fail against nonstandard Lewisians of our kind, i.e. Structured Universalists. In what follows, I argue against each of Koslicki's objections thereby defying her Conservative challenge against Permissivism.

2.8 Permissivism Strikes Back Again

2.8.1 The Argument from Domain Division Defied

As we have seen, Koslicki argues that we should prefer the structured Evansian domain of familiar wholes rather than the Lewisian domain of familiar and scattered wholes.

I disagree. First, the Evansian domain restricts composition to familiar wholes, and we know where restricted composition leads: either the Lewis-Sider argument from vagueness or concerns of arbitrariness and anthropocentrism. Restricting composition is never a good idea if one cares for impartiality in ontology.

Then, Koslicki argues that the Evansian domain fares better than the Lewisian one because it comes "pre-divided" into highly eligible referents. I understand this as a claim about structure. If so, Koslicki is certainly right in pointing out this expressive deficiency in the Lewisian machinery. We said this at length in Chapter 1. But we also said that Lewisians can upgrade their account of composition and accept a principled discrimination between *natural* and *unnatural wholes*. In other words, Lewisians should be Structured Universalists.

In this case, the objection loses much of its original appeal. Indeed, the SU domain comes pre-divided, whatever that means, into natural and unnatural wholes. Koslicki argues against the division on the grounds that it would "imposed" over the domain. But under SU, this is not the case. The SU domain is structured.

Overall, I do not see the disadvantage of an SU ontology over an Evansian one. Both account for the pre-division of their domains and both accept structure. However, the Lewisian reclaim all the no arbitrariness, no vagueness, no anthropocentrism policy that is distinctive of Unrestricted Composition lovers.

2.8.2 The Argument from Impotence Defied

The objection that, for Lewisians, wholes are not natural in virtue of how they are intrinsically, but rather in virtue of the properties they have has also been considered in Chapter 1. In fact, it has been among the reasons why we have decided to develop a distinctive notion of *objectual* naturalness.

So, in principle, I agree with Koslicki that standard Lewisian Permissivism has this problem. However, I do not agree that this is a problem for Lewisian accounts of Permissivism as such. In fact, our Structured Universalism dispels the worry she raises.

Indeed, according to SU, objects *are* natural or unnatural. It is their internal structure that makes them robust and nomologically relevant or nonrobust and nomologically otiose. It is their own nature that makes them eligible or ineligible referents.

Thus, Koslicki is wrong. It is not an exclusive privilege of Evansian Conservatism to have objects whose internal structure makes them suitable to be eligible referents, causal *loci*, and so on.

2.8.3 The Argument from Indeterminacy Defied

Regarding the last issue, I have a sort of *tu quoque* criticism to offer. I am afraid I can do no more, here, than retreating in defense position. But I think it will be instructing in any case.

Koslicki points out that if we consider the Lewisian ontology in its full force, we are going to have massive material overlap of ordinary wholes, e.g. we have no single Bruce the cat taking a nap on the mat, but rather an overpopulation of almost-identical cats, all taking a nap on the mat[41].

Apart from the incredulous stares the view may raise, Koslicki is right when she argues that massive overlap trumps some of the distinguishing power of naturalness. After all, each of the almost-identical cats should count almost as natural as the other. In the presence of the many, there is no easy way to pick out the one[42].

However, even if Koslicki is right about this, it is not at all clear to me why she thinks that Evansian Conservatives are excused from similar issues.

The *Problem of the Many* (Unger 1980) – of which the "Many but Almost One" Lewisian doctrine is a purported solution – is a problem for everyone[43], not just of Permissivists.

Indeed, the problem arises precisely because we accept sharp boundaries

---

[41]Strictly speaking, even the mat should be crowded, but we will ignore such complication.

[42]Let me be clear. I do *not* endorse the Many but Almost One proposal from Lewis. I will simply defend its good standing against Koslicki's objections.

[43]With the exception of Nihilists, who deny the existence of composite objects (e.g. Dorr and Rosen 2002), and of Brutalists, who accept that facts about composition are settled as a matter of brute fact (e.g. Markosian (1998a). Though, some have argued that Nihilists faces other issues (cf. Rettler 2018) and that Brutalists rely on objectionable methodology (cf. Horgan (1993).

and find ourselves incapable of drawing *unique* such sharp boundaries for objects[44]. Consider Hawley's apt words (2018, p. 254, italics added):

> As we usually think of them, individual cats do not have sharp boundaries. They are constantly ingesting, digesting, and excreting, breathing in and out, and shedding hairs. If we insist that there is no vagueness in the world, so that objects must have sharp boundaries, yet we do not want to deny the existence of cats, then we face various problems. [...] As Lewis points out, there are lots of different aggregates of particles which have a decent claim to make up the cat. If we allow Lewis to slide from talk of particles plurally, to talk of aggregates, to talk of composite objects, then it looks as if there are very *many precise*, overlapping, cat-like objects curled up on the mat, each differing from the others in only a few small parts around its edges. All are equally good candidates for being the cat. So which is the cat?

Koslicki argues that Lewisian Permissivists cannot reclaim well-demarcated things, but this is not quite true. As Hawley says, Lewisian Permissivists, rather, accept an overpopulation of well-demarcated things – after all if cats have sharp boundaries and there are many cats, there are many things with sharp boundaries. So, while it is true that the Many but Almost One doc-

---

[44]Indeed, because of the problematic nature of the Problem of the Many, Unger (1979a, 1979b, and 1979c, 1980) has contended that our very concept of "well-demarcated ordinary thing" is inconsistent and has, thus, drawn the conclusion that there are *no* objects falling under our ordinary concepts of ordinary things e.g. CAT, COFFEE CUP, TREE, and whatnot. Clearly, Unger sees the Problem of the Many as a general problem.

trine has profligate consequences, it is not true that it has issues with well-demarcated things.

On the other hand, I do not see how Conservatives can claim immunity against these sorts of worries. Consider Koslicki's preferred ontology: a restricted ontology of wholes structured by Aristotelian Forms (2008). Koslicki maintains that some xx compose a cat iff they are configured as a cat by the *Cathood* Form. Surely, the Form configures the xx aggregate. But what about the xx^* aggregate which is just like the xx aggregate except for the ith x among the xx, i.e. x_i, e.g. a quark or perhaps a hair. Is it so that the Cathood Form denies this aggregate the structure of a cat? An affirmative answer would be surprising – and it would sound arbitrary, I would say.

This sort of problem affects all those who accept (i) that there are cats, coffee cups, stones, trees, and so on; (ii) that cats, coffee cups, stones, trees, and whatnot should have reasonably sharp boundaries; and (iii) that cats, coffee cups, stones, trees, and whatnot happen to have parts that are not clearly part of them and not clearly not part of them. And, in this respect, I say that Permissivists and Conservatives are on equal footing.

As per singular reference, it is undeniable that overpopulation solutions (e.g. Lewis 1993a) put pressure on certain Permissivists to say how we should attain thoughts and references about a *particular* object, e.g. "Bruce the cat is on the mat", "That is Milo!".

However, it should be said, first, that overpopulation solutions are *not* mandatory for Permissivists. In fact, Lewis himself (*ibid.*) considers a less profligate solution based on supervaluationism, according to which it is true that there is *exactly one* cat on the mat but also that we cannot say which of

the cat-candidates is the cat[45]. Second, some overpopulation lovers, i.e. most recently, Openshaw (2021), have argued that they are well-placed to regain singular reference, appearances notwithstanding. In particular, Openshaw argues that when we think or refer singularly *about*, say, Bruce the cat on the mat, we thereby think or refer singularly about *each* of the almost-identical, massively overlapping cats on the mat.

All in all, I have tried to show that regarding issues such as overpopulation and indeterminacy of reference, Permissivists are not as doomed as Koslicki says on behalf of the Conservatives. In fact, I have tried to show that Conservatives are no better placed than Permissivists on similar issues. I have definitive answer to offer on this question but a defense of the good standing of Permissivism in the face of Conservative complaints.

2.9 Concluding remarks

In this section, we have faced Koslicki's Challenge, according to which Lewisian Permissivists cannot make sense of our use of singular reference and of well-demarcated objects, naturalness notwithstanding.

I have shown that this is not true. In particular, I have argued that

---

[45]Hudson (2001) also offers a different route based on a radical reconception of the parthood relation. His proposal is quite complicated, so I am not going to discuss it. However, consider his words, which speak volumes about Hudson's disdain for overpopulation solutions (*ibid.*, p. 39):

> Among the most troublesome are worries about naming and singular reference ... how can any of us ever hope to successfully refer to himself without referring to his brothers as well? Or how might we have a little private time to tell just one of our sons of our affection for him without sharing the moment with uncountably many of his brothers? Or how might we follow through on our vow to practice monogamy?

Structured Universalism offers an ideal solution for the Permissivists. A solution that achieves the same benefits of Evansian Conservatism. SU gives us a pre-divided domain of intrinsically highly eligible referents. Finally, I have noted that while abundant ontologies may face overpopulation issues and, thus, referential indeterminacy, Conservative ontologies are not immune to such concerns too, and, thus, cannot claim the winning hand. All things considered, I take Permissivism to be safe and sound, and still the best game in town.

Chapter 3

How To Sider a Lewis ... So as to Schaffer It

3.1 Preliminaries

In this final Chapter, I will be concerned with a certain package of Lewisian theses which could be considered a sort of received view among the Lewisians. It consists of Unrestricted Composition, standard Lewisian graded naturalness, Naturalness as Fundamentality, Downward Naturalness/Fundamentality, and Reference Magnetism. Without going into details I will provide starting from §3.2, I can anticipate that the package will not stand careful scrutiny. In fact, it suffers a sort of Nihilistic collapse thereby jeopardizing Unrestricted Composition and trumping our talk and thought. Because of this, I will kick-start the articulation of a new, nonstandard Lewisian package that rejects Lewisian naturalness in favour of Schafferian naturalness, the identification of naturalness and fundamentality, and the usual Reference Magnetism.

The Chapter unfolds as follows. In §3.1, I offer some theoretical preliminaries, especially about what I will mean, here, with "Books of the World". This will be important considering that I will frame my talk in terms of this dialectical device and will often speak of "Lewisian Book of the World". In §3.2, the standard Lewisian package will be critically presented and assessed. In §3.3, we will present the main predicament for the standard Lewisian package. In particular, in §§3.3.1-3.3.4, I develop a score function for ranking meaning-assignment, analyzing various readings of magnetism, and presenting a nihilistic collapse of the Lewisian Book of the World onto the Siderian Book of the World, while in §3.3.5, I reassess and restate our predicament in the form of a trilemma. In §3.4, we present our solution to the predicament, in particular, we develop a new heterodox Lewisian package that does away with the degree-theoretical conception of naturalness in favour of the Schafferian conception, distinguishes naturalness from fundamentality, and presents a new magnetism that exploits the notion of salient guise. In §3.5, we offer a conclusion with some general considerations.

Note that some of the themes of this Chapter will be further elaborated in Appendix B where I discuss the case of Reference Magnetism in gunky worlds, i.e. worlds where everything has a proper part. The Appendix will show how the new package could solve some issues regarding reference-fixing in worlds with infinite descending chains of proper parthood.

3.1.1 Books of the World

Suppose we can avail ourselves with a peculiar representational device: *books of the world.* A Book of the World is not really a novel tool. It is just a way to represent - or describe if you want - the world as being such and such. In other words, it is a way to represent/describe the world's overall structure. And it does so by means of a full (*viz.* complete) specification of how the world is, what it comprises, and how it works.

Now, before we can move on right away, some clarifications are due for we need to get clear on what exactly our concerns are and are not:

(i) The "Book of the World" jargon is metaphoric jargon to talk about the structure of the world. Not too much hinges on this particular terminological choice. We could have used the "worldview" talk or the "perspective onto the world" talk. Or we could have even referred to Nelson Goodman's (1978) "world versions", i.e. worldmaking symbol systems, that is, symbol systems projected by us onto the world. This is all true, but there are at least four good reasons to prefer the "Book of the World" jargon, here: first, we want to avoid useless terminological warfare; second, we do not want to suggest that the heart of our discussion hinges on certain bold assumptions – be it Goodmanian or else – underpinning how we represent the world, the world itself, and their interplay; third, both the worldview and perspective terminologies have entrenched usage that would require careful distinctions; fourth, our discussion will regard Lewisian metaphysics and will touch especially the works of Lewis, Sider, and Schaffer, so given Sider's (2011)

use of the Book of the World metaphor, by using it too, we will find ourselves on a sort of dialectical level playing field.

(ii) A Book of the World, here, has no connection with what Jeffrey (1983) calls *world-books*, i.e. linguistic ersatz constructions of possible worlds in terms of consistent and complete novels of some sort. (Nor is it a different linguistic ersatz construction.) Though, as we have mentioned before, it may have a connection with what Goodman calls *world versions*. That said, we should say, first, that the present Chapter has no interest in pursuing an analysis of possible worlds. And, second, here we want to keep a noncommittal – or rather instrumental – attitude about what, metaphysically speaking, these books are. So, whether a Book of the World is – ultimately – to be understood as a literary fiction, a Platonic abstract artifact, a worldmaking symbolic system, or a class of descriptive models of some sort, it will not really matter. It is a representational device; it is a useful instrument of discussion and analysis, and this is enough.

(iii) A Book of the World, as we understand it, is not equivalent to a theory's *ontology*. Suppose we are somewhat of Quinean leanings. Then, given a theory T, the ontology of T is the list or inventory of those entities T ought to accept to make its statements true. And this, as we know, would mean very roughly that we will have to extract our ontological commitments from a bunch of existentially quantified sentences like the following ones:

$\exists xx$ (the xx are spacetime points) $\land \exists yy$ (the yy are subatomic par-

ticles $\wedge$ the yy are arranged sofawise $\wedge$ the yy are located at the xx).

$\exists x \exists yy (x$ is a living organism $\wedge yy$ are cells $\wedge yy$ are proper parts of x).

$\exists xx(xx$ (are Marvel Comics characters $\wedge$ Peter Parker is among the xx $\wedge$ Norman Osborn is among the $xx \wedge$ Peter Parker = Spider-Man $\wedge$ Norman Osborn = the Green Goblin $\wedge$ the Green Goblin is the archenemy of Spider-Man $\wedge \forall y$ (if y is a Marvel Comics character $\rightarrow y$ is an archenemy of Spider-Man $\wedge y =$ the Green Goblin)).

$\exists n \exists x \exists yy \exists z(n > \aleph_0 \wedge yy$ are angels $\wedge$ the yy are immaterial beings $\wedge$ z is a pin $\wedge$ the yy dance on z).

However important could it be to draft ontological inventories, though, and expose a commitment to the existence of – say – spacetime points, subatomic particles arranged sofawise, living organisms, cells, comic-book characters, (very large) numbers, angels, pins, and so on, it does not hit the nail on the head of what books of the world should represent.

Indeed, suppose our world is of the nominalistic sort Lewis describes at the beginning of "Nominalistic Set Theory" (1970, p. 225):

> [...] an enormous hypercubical array of space-time points, with all wholes composed of one or more of those points.

Then, an ontology gives us only the nodes in the array, not the *meta-physical laws* by means of which the nodes in the array relate with each

other, have a certain nature, and carve – or not – the array's joints. These laws are overarching hypotheses such as these:

(Material Plenitude): There exists a material object x for every modal occupational profile, i.e. for every function from worlds w to matter-filled spacetime regions R, i.e. $f(w_i) = R_i (1 \leq i \leq n)$.

(Unrestricted Composition): For any objects xx, there is always a further object y composed out of the yy, no matter how spatiotemporally and causally unrelated are the xx.

(Priority Wellfoundedness): The metaphysical priority relation is well-founded; there can be no infinite regress of priority.

It is these overarching hypotheses that flesh out our description of the world, which, if you want, could be that enormous Lewisian n-dimensional hypercubical array of spacetime points[1]. It is these overarching hypotheses that constitute the backbone of one's Book of the World. And it is in these overarching hypotheses that, in this work, we will have devout a special concern.

(iv) A Book of the World has several different chapters, so to speak, that cover composition, time, modality, causality, laws of nature, and so on. But in the present work, we will focus on the structure of material objects. In particular, on mereological composition and its connections with some issues related to fundamentality, naturalness, reference magnetism, and singular thought. So, perhaps we should not really talk

---

[1]Though, we are not committed to this view.

in terms of books of the world simpliciter but of books of the material world or, maybe, of material chapters from books of the world. True, but once we acknowledge the point and are mindful of it, we can safely be more liberal with our terminology and continue to talk and reason about books of the world simpliciter.

(v) Monists about books of the world believe there is but one correct Book of the World – the Book of the World – for they believe there is but one correct way to represent/describe the world. Pluralists, instead, will deny this preferring to talk about multiple, equally eligible books of the world. In what follows, we will largely remain agnostic on this and write as if each candidate Book of the world is competing for the correct representation of the world. But it is to be noted, nonetheless, that our preferences lie in a form of pluralism: namely, that there is no single eligible perspective/Book of the World and that even if we have strong abductive reasons to prefer one such perspective/Book of the world, our world could still be the one viewed from *another* perspective or written in the language of a *different* Book of the World. Each world has its distribution of facts that call for a different theory-choice. We will no press further on this as nothing relevant hinges on it here.

<p style="text-align:center">∗ ∗ ∗</p>

3.1.2   The Lewisian Book of the World

Consider what we are going to call the *Lewisian Book of the World* (LBW). In particular, consider the following package of theses about the metaphysics

of the material world:

(Unrestricted Composition): For any objects xx, there is always a further object y composed out of the xx, no matter how spatiotemporally and causally unrelated are the xx.

(Naturalness for Properties): For any property P, P is natural iff P carves nature at the joints, i.e. iff P makes for – at least – intrinsic qualitative similarity among things and determines the causal powers of things. (For instance, BEING A DOG, HAVING $\frac{1}{2}$ SPIN, or HAVING β-DECAY, are natural properties). Otherwise, P is unnatural, gerrymandered, and miscellaneous. (For instance, such as BEING A TROUT-TURKEY, or "Goodman properties", e.g. BEING GRUE, are unnatural properties).

(Naturalness as Fundamentality): For any natural properties P and Q and world w, P is less natural than/more natural than/as natural as Q in w iff P is less fundamental/more fundamental/as fundamental as Q in w.

(Downward Mereological Fundamentality/Naturalness): If object y is a proper part of object x in w, then y is more fundamental than x in w/if object y is a proper part of object x, then y has a property P that is more natural than any other property had by x in w.

This package, in itself, is never fully explicitly advocated by Lewis, but the theses that make it are *de facto* endorsed by Lewis in a number of places (1983, 1984, 1986a, pp. 59-63 and pp. 212-213, 1991, pp.79-80, Lewis

([1993b](#)), pp 208-209). So, it is safe to say that these theses are well entrenched in and lie at the core of Lewis's metaphysics. For this reason, I also think no one will be offended or be left in amazement when I say that the package is palatable to most of those who are willing to follow David Lewis's footsteps: in other words, the Lewisians.

Now, in this Chapter, we want to show that as soon as we supplement the Lewisian package with two theses about reference and cognition – which the Lewisians would find attractive and relatively unproblematic – troubles ensue. Especially, we will find that the Lewisians will have a hard time holding one of their theoretical cornerstones: Unrestricted Composition.

Our two theses are "magnetic"[2] in character. The first one is well-known; it is the *metasemantic*[3] thesis that Lewis discusses in "New Work for a Theory of Universals" ([1983](#)) and "Putnam's Paradox" ([1984](#)):

(Reference Magnetism): Given a language L, a class E of expressions $e_1, ..., e_n$ of L, and a class M of candidate meanings $m_1, ..., m_n$ for $e_1, ..., e_n$ the correct m-assignment to $e_i (1 \leq i \leq n)$, i.e. the meaning[4] of e_i, is a function $\mu(e_i) = m_i$ fixed by how e_i is used in L plus how eligible (natural) is m_i.

---

[2]The reader should be aware that, at times, we will use the simpler label "Magnetism" to mean "Magnetism, be it referential or cognitive".

[3]Indeed, Reference Magnetism does not tell us what a given word means in a language but why it has the meaning it has (or why it should have this instead of that meaning). Thus, it provides a metaphysics for semantics and this is what makes Reference Magnetism a metasemantic rather than semantics theory.

[4]In this work, unless otherwise specified, we will make no distinction between meaning, reference (or meanings and referents), semantic values, and/or extensions. In this regard, we will keep a terminologically relaxed approach given that, here, nothing hinges on furthering such terminological niceties. Moreover, our use of these notions will always be contextually clear.

The second one, instead, is a Dickie-inspired generalization of the Principle of Perceptual Magnetism we have advanced in Chapter 2, which regards *singular thoughts*[5], that is beliefs – or a body of beliefs – that are about one single object or, to use a Dickie's phrase, that "converge on only one object" (cf. Dickie 2015):

(Cognitive Magnetism): Given a subject S and a particular object o[6], S's beliefs are about o or converge on o iff o's intrinsic eligibility (naturalness) makes it the case that S has cognitive focus on o.

Lewisians would — or should — welcome these magnetic theses. After all, Cognitive Magnetism seems an obvious companion of Reference Magnetism[7]. We use reference also as a vehicle for expressing beliefs about the world. So, when Lewis (1983) notes that it is Bruce the cat's intrinsic eligibility (e.g. well-demarcated spatiotemporal boundaries and causal powers) that makes us more referentially interested in him rather than in the feline mass tissue

---

[5]This sort of belief seems to be widespread, especially in perceptual scenarios where we are intentionally directed towards the object – e.g. we see Bruce the cat –, or make frequent use of *perceptual demonstratives* e.g. "this", "that" – for example, when upon seeing Bruce the cat, we say "That is our little Bruce!" or "This is Bruce the cat" –, or make on-the-spot perceptual reports – for example, when upon encountering a never-seen-before Bruce the cat, we say "That cat is beautiful; it moves so elegantly and its purring is very cute".

[6]I will use "o" instead of "x" only when the variable stand for a particular object.

[7]Exegetically, one could say that Lewis understands "Reference Magnetism" broadly so as to range over languages and thoughts (see especially, Lewis 1983 and 1993a, footnote 6). So, our doubling of magnetism is unnecessary. To a certain extent, I could agree with this, but there are two main reasons why I think our doubling is, in fact, well-placed: first, Lewis approached reference broadly (also because of certain specific views to which we do not want to be bound), but someone else may not want to follow suit, especially if one wishes to highlight mechanisms that are specific to language or to thoughts; second, Lewis had nothing to say about singular thinking. So, I think that it is better to understand "Reference Magnetism" more narrowly so as to pertain fixing-mechanisms for language only and other magnetisms – for instance, Cognitive Magnetism, Perceptual Magnetism – doing other relevant but different fixing-mechanisms. This helps us to broaden the scope of Magnetism without losing analytical clarity.

that occupies his same cat-shaped region of space, he may – or should – have very well agreed that it is Bruce the cat's intrinsic eligibility that makes us more cognitively interested about Bruce than about the feline cat-shaped that follows him. Bruce the cat makes us cognitively focused on him. And how could it not be so? Perception is a causal process. Eligibility tracks causal powers. Bruce is more of a causal locus than the cat-shaped chunk of feline matter that follows him. So, Bruce's nature cognitively magnetizes us. The point we are going to make is surprising and serious. Namely, that once the Lewisians endorse their (now aptly magnetized) Lewisian package, it is *Nihilism* rather than Universalism about composition that they should accept.

As we will show, this happens because the joint-carving profile of the world puts strong pressure on how our words and thoughts should be fixed to the point that the Lewisian Book of the World would – or should – collapse onto the *Siderian Book of the World*: a Lewisian book that knows no chapter for parthood and composition. Certainly concerning for those who wished to be Lewisian and composition lovers.

So what should these Lewisians do? Should they stop loving compositional plenitude and begrudgingly surrender to desert landscapes? Should naturalness go? Or perhaps it is Magnetism that should go? We think the answer to all these questions is no. In what follows, we will try to articulate a solution that can let Lewisian Universalists avoid nihilistic damnation while attending Universalistic salvation. As we will see, this crucially passes through the rejection of the graded, inegalitarian conception of naturalness in favour of the scientific or egalitarian conception advanced in Schaffer (2004).

159

The dialectic of this Chapter will certainly prove useful for all those Lewisians who want to retain a strong commitment to both Unrestricted Composition and naturalness. We will investigate their interplay and how they can better serve the purpose of Lewisian metaphysics. All the while, we will further foster the fruitfulness of our own touch of heterodox Lewisianism.

3.2 The Package

We want to begin by offering some context for the Lewisian package and see how its theses really inform the Lewisian picture of the world and connect with one another.

Unrestricted Composition

Despite providing no explicit defence of classical extensional mereology, Lewis's adherence to it is well-known. Classical mereology, for Lewis, is "legitimate, unproblematic, fully and precisely understood" (1991, p. 81); its denial is a no-go, it makes composition mysterious, "magical" (cf. *ibid.* footnote 8, p. 79 and Lewis 1986a). Along with classical mereology, it is likewise well-known Lewis's acceptance and defence of the axiom of Unrestricted Composition. Consider his own words (1991, pp. 79-80):

> I say that whenever there are some things, they have a fusion. *Whenever*! It doesn't matter how many or disparate or scattered or unrelated they are. [...] I am committed to all manner of unheard-of things: trout-turkeys, fusions of individuals and classes, all the world's styrofoam, and many, many more. [...]

160

> if you wish to ignore [queer fusions], of course you may. Only if
> you speak with your quantifiers wide open must you affirm [queer
> fusions'] existence. If, like most of us all the time and most of
> the time, you quantify subject to restrictions, then you can leave
> it out. [...] Doing away with queer fusions by restricting com-
> position cannot succeed, unless we do away with too much else
> besides.

So, according to Lewis, composition happens anywhere and anyhow. Fusions
of all sorts exist[8] and that is so despite them escaping our cognitive and
communicative notice. Composition cannot be really restricted – say over
ordinary fusions such as Bruce the cat –; our quantifiers can. But if we are
staunch about genuinely restricted composition, then we must be ready to
face the threat of arbitrariness and vagueness (cf. Lewis 1986a pp. 212-13
and Sider 2001, §4.9).

Naturalness

Then, we have another famous piece of Lewisian machinery: the distinction
between natural and unnatural properties (Lewis 1983, 1984, 1986a). Such
distinction, for Lewis, is primitive, objective, and graded. Thus, naturalness
is a spectrum whose range varies from gruesome unnaturalness to perfect
naturalness. The joint-carving, qualitative profile of the world hinges on
the perfectly natural properties. Given Lewis's physicalism[9], in our world,

---

[8]The quantifiers are absolutely unrestricted.

[9]Physicalism – a fancier word for the more old-fashioned "materialism" – is the hy-
pothesis that every property instantiated in a world is a physical property, or supervenes
on a physical property, or perhaps is grounded in a physical property. In Chapter 1, we

these properties are identified with microphysical properties, e.g. HAVING $\frac{1}{2}$ SPIN, HAVING QUANTUM COLOUR, HAVING QUANTUM FLAVOUR, BEING A SPACETIME POINT. Going upwards, so to speak, properties become less and less natural. So, for example, HAVING β-DECAY is less natural than HAVING QUANTUM FLAVOUR; BEING A DOG is less natural than HAVING β-DECAY, ..., and so on until we reach the gruesome, unnatural Goodman properties, e.g. BEING A TROUT-TURKEY, BEING GRUE, and so on. So far so good.

Naturalness as Fundamentality

More interesting for us is the fact that Lewis equates the notions of naturalness and fundamentality. This is particularly evident when Lewis talks of perfectly natural properties. For our world, he repeatedly talks of "fundamental physical properties" and/or of properties cited in the "fundamental laws of microphysics" (cf. *ibid.*). But, more generally, he says that (1994, pp. 493–494):

> [i]f two possible worlds are discernible in any way at all, it must be because they differ in what things there are in them, or in how those things are. And "how things are" is fully given by the fundamental, perfectly natural, properties and relations that those things instantiate.

encountered the view while discussing the Lewisian model of natural objects and we noted that Lewis endorses a form of supervenience physicalism, i.e. Humean supervenience, i.e. the (in)famous thesis according to which in worlds like ours, every contingent features supervene on the perfectly natural properties of point-sized objects (perhaps, spacetime points) or on those of point-sized occupants of those points (perhaps, subatomic particles). He does not think this to be true in every possible world, but there are reasons to believe Lewis, in fact, does maintain that reductions of this sort, on the perfectly natural/fundamental properties hold in *every* possible world (see Borghini and Lando 2011, Lewis 1986b, pp. ix-x and 1994).

Fundamentality and perfect naturalness are clearly used as having the same meaning. The sceptical reader might have a worry, though: while Lewis has a clear notion of absolute fundamentality to be compared with the notion of perfect naturalness, he appears not to have an equally clear notion of relative fundamentality to be compared with the notion of relative naturalness (cf. Lewis 1983, 1984, 1986a).

It is certainly true that Lewis talks often of more or less natural properties[10], but never of more or less fundamental properties[11]. So, one might be tempted to wonder whether Lewis works really under the assumption that there are two – intertwined albeit different – notions: for some property P, P is fundamental iff P is perfectly natural, otherwise P is nonfundamental, whereas P is (relatively) natural iff P carves reality at the joints to a given

---

[10]Indeed, Lewis talks variously of "less-than-perfectly natural properties", "much-less-than perfectly natural properties", "more natural properties", "less natural properties" (cf. Lewis 1983).

[11]To my knowledge, with one sole, unhelpful exception. Indeed, while discussing his commitment to "cautious reductionism", that is supervenience, Lewis does mention a relation of relative fundamentality, but with little theoretical commitment and consideration (1983, p. 358):

> One might wish to say that in some sense the beauty of statues is nothing over and above the shape and size and colour that beholders appreciate, but without denying that there is such a thing as beauty, without claiming that beauty exists only in some less-than-fundamental way, and without undertaking to paraphrase ascriptions of beauty in terms of shape etc.

In the passage just quoted, Lewis wants to dispel worries about supervenience, especially that the supervenient exists less fundamentally than the subvenient. And this is not so, of course, for someone who addresses existence from a Quinean standpoint: existence is exhaustively captured by existentially quantified expressions. Thus, it is the existential quantifier that does the dirty work. Quantifiers are logical terms and, hence, are intended to be fully precise. And when read unrestrictedly – as is the case when we do ontology –, such terms are absolute: if something exists, it exists *simpliciter*. There is no more or less existing. So if beauty exists, even if it supervenes on shape and size and colour, it exists *simpliciter*. So, the quoted passage does not really help us in making the case of a proper notion of "relative fundamentality" in Lewis. Ironically so, though, since I think Lewis would have no qualm in agreeing that aesthetic properties are indeed less fundamental than shape and size and colour properties because they supervene on them.

degree i ($min \leq i \leq max$)[12]. The match is not perfect. Fundamentality is ungraded, all-or-nothing; naturalness graded and allows for comparative judgments.

This is an interesting, but misguided point[13]. It is not that fundamentality and naturalness cannot be detangled or treated as diverse notions. In fact, recently, some such as Bennett (2017, §§5.9 and 6) and Mathers (2019) have expressed a principled opposition towards the Lewisian "Naturalness as Fundamentality" conception[14]. And I must admit I share their opposi-

---

[12]Of course, we want to say that if a property has the minimal degree of naturalness, it is gruesome, utterly unnatural, while that if it has the maximal degree of naturalness, it is perfectly natural.

[13]A related interesting mismatch worry has been raised in Schaffer (2014) against Sider's sort-of-Lewisian "structural operator" in *Writing the Book of the World* (2011). Such "structural operator" is intended as an extension of Lewis's naturalness, a tool to draw the fundamental vs nonfundamental distinction and, in fact, a tool to assign to each nonfundamental portion of the language fundamental truth-conditions (cf. *ibid.*, § 7.4). The worry we are discussing is whether naturalness and fundamentality mismatch under the Lewisian standard treatment. As we are going to say, there is no good reason to suppose it is so. Schaffer's worry, on the other hand, is that the "structural operator" allows an unwanted mismatch between the natural vs unnatural distinction and the fundamental vs nonfundamental distinction. The fundamental vs nonfundamental distinction should be a generalization of the natural vs unnatural distinction and, thus, it should reflect the relative, graded character of the latter. But, under Sider's strategy, this move fails as it becomes rather an absolute, all-or-nothing distinction. To amend this, Schaffer recommends Sider the implementation of comparative notions such as "more structural than", "as structural as", "less structural than", and whatnot. So, Schaffer's worry touches the worry we have discussed but only tangentially. The reader, though, can bear this in mind as further clarification.

[14]Details would let us go astray, but we can say that according to Bennett (2017) naturalness fails to characterize adequately fundamentality because, among other things, "[it] is not obviously a unified phenomenon, and it is also a poor fit for our pretheoretical relative [and absolute] fundamentality concepts" (*ibid.*., p. 139). She, in turn, recommends a characterization in terms of "building". Mathers (2019), on the other hand, maintains that there are pairs of properties P_1 and P_2 such that Lewisians would count P_1 as more natural/structural than P_2 when, in fact, we should count P_2 as more fundamental than P_1. On top of that, we could also note that one may have reasons to accept both naturalness and fundamentality but opt for differential treatment and, thus, for different conceptions thereof. Indeed, suppose one accepts that naturalness is an absolute, all-or-nothing concept as suggested in Schaffer (2004), while that fundamentality comes in degrees. Then, one is in the position to unfold interesting scenarios. Consider a world where the whole and the parts that compose it are the "same portion of Reality" (Lewis 1991, p. 81) – that is,

tion in this regard. So, it is not that. It is, rather, that the evidence we have from the overall Lewisian usage is that the Lewisian conception does support a thorough identification of the two notions: some property P is (absolutely) fundamental iff P is perfectly natural; some property P is relatively fundamental iff P is relatively natural (cf. Bennett 2017, Mathers 2019, Sider 2011). Moreover, as Bennett (2017, §5.9) notes, fully worked-out accounts of relative fundamentality have been mostly neglected and ignored until recently, so it should come as no surprise as we find no such account in Lewis.

Downward Mereological Fundamentality/Naturalness

Finally, the Downward Thesis regarding the interplay between parthood, on the one hand, and naturalness/fundamentality, on the other. It says, roughly, that the proper parts of an object are more natural/fundamental than the object itself. It follows from the following two widely popular theses about the structure of the world:

---

a world where some form of composition as identity holds. Perhaps, this means that the whole and the parts that compose it carve nature at the joints equally. But that may not necessarily mean that the whole and the parts that compose it serve the same *explanatory purposes* when it comes to explaining the world. Perhaps, the parts that compose the whole – or the other way around – occupy a *more fundamental* level of explanation than the whole even if they are equally natural. This seems to me perfectly reasonable. Or consider a world where there is genuine emergence, i.e. the whole has intrinsic properties that do not mereologically supervene on the intrinsic properties of its parts (e.g. quantum entanglement, consciousness, or life). Then, as we have suggested in Chapter 1, we may want to say that the whole is more natural than its parts. But we may not want to say that this means that the whole is also more fundamental than its parts. Maybe, because we want to say that even if the emergent whole fails to mereologically supervene on its parts, it is the parts that "build" or "determine" the whole. So, in a sense, the parts are more fundamental than the whole even if less natural than it. Whether these scenarios survive ultimate scrutiny is to be seen, but it seems to me they are plausible enough to be worth serious consideration.

(Parts Priority): The existence of parts is metaphysically prior to the existence of the wholes they compose.

(Wellfoundedness): The metaphysical priority relation is well-founded; there can be no infinite regress of priority.

We have already encountered this package in Chapter 1. According to this package of theses, metaphysical priority tracks the mereological structure of the world from the larger to the smaller. In other words, the priority ordering tracks proper parthood. However, since there can be no infinite descending chains of metaphysical priority, there can be no infinite descending chains of proper parthood. In fact, every such chain terminates in mereological atoms, i.e. objects with no proper parts.

Adherents of the Parts Priority + Wellfoundedness package abound, and Lewis is no exception. He accepts it as a sort of background working hypothesis – and many Lewisians would follow suit (e.g. Sider 2011) –, but seems to point in the direction of it when expressing his adherence to Humean supervenience, which accepts "the supervenience of the large upon the small and many" (Lewis 1999, p. 294) – an assertion that, as Schaffer says, "suggests an implicit mereological aspect" (2003a, p. 507).

The structure of this supervenience of the large on the small and many can vary depending on whether the world under consideration is gunky, i.e. a world with infinitely descending chains of proper parthood, or atomic, i.e. a world that bottoms out with an ultimate level of mereological atoms (i.e. partless objects). And, as we know, Lewis (1991, p. 20) accepts the possibility of Parts Priority + Gunk, but the actuality of Parts Priority +

Wellfoundedness + Atomism. So, in our world, the chains of mereological dependence end with a bottom level of partless objects instantiating the most fundamental/perfectly natural properties. Indeed, this is exactly what Lewis professes in various places, especially when talking of our world in terms of an "enormous hypercubical array of space-time points, together with all wholes composed of one or more of those points" (1970, p. 225), where everything supervenes "upon the pattern of coinstantiation of fundamental *physical* properties and relations" (1999, p. 293). Parts Priority + Wellfoundedness + Atomism may be a default view[15], as Cotnoir (2013) argues, but Parts Priority + Wellfoundedness + Atomism + Naturalness as Fundamentality is a genuinely *Lewisian view*.

Let us take stock for a moment so as not to get lost in the dialectic. Who are our Lewisians, then, at the end of the day? For our concerns, the Lewisians are those whose Book of the World holds some Lewisian core beliefs: (i) the world has a mereological structure governed by classical extensional mereology, hence composition is unrestricted; (ii) properties can be natural/joint-carving or unnatural/gerrymandered – in Lewisian terms, there are natural/joint-carving classes of objects and unnatural ones; (iii) that naturalness tracks fundamentality (and vice versa); and (iv) Parts Priority holds, hence parts are more fundamental/natural than then their wholes. In fact, the core package could also be restated as classical extensional mereology + naturalness + Naturalness as Fundamentality + Parts Priority + Wellfoundedness + Atomism.

---

[15]There are famous dissenters, though, e.g. Schaffer (2010a, 2010b) that, as we know, accepts Wholes Priority+Wellfoundedness (with respect to ascending chains of proper parthood).

Reference Magnetism

Now, for us the core package has interesting consequences when suitably "magnetised". It is Lewisian Magnetism about reference and thought we are talking about, but we do not want to be hasty with it since there are a few things that need to be clarified first. So, before we can move on, we need some more discussion.

Naturalness, for Lewis, should show us the highway to "the traditional realism that recognizes objective sameness and difference, joints in the world, discriminatory classifications not of our own making" (1984, p. 228). It does so by providing a unified and clarifying treatment – among other things – of intrinsicality, fundamentality, laws of nature, qualitative similarity, physicalism, mental and linguistic content[16].

Take the latter and ask: "Why is it that our words have the meanings they have?" Perhaps, as Wittgenstein (1953, 1958) emphasized, the meaning of a word consists just in its use. That is, for a token expression e of a language L, a population p in a world w at time t, and ordinary contexts of utterances c for L-users among p in w at time t, the meaning of e is determined by the sociolinguistic rules/norms/conventions that regulate e-involving communicative practices among L-users members of p in w at t under c.

---

[16]For more discussion on the roles of naturalness see Dorr and Hawthorne (2013). Naturalness is a popular metaphysical tool, but it has its principled detractors. Consider Bennett (2017), for example, has doubts about the fruitfulness of naturalness and says that it is a rather incoherent notion. Or Thompson (2016), who has argued that naturalness may not be natural after all. Others prefer instead to launch their attacks on specific naturalness roles. Given our present concerns, we will consider criticisms from people like Warren (2023).

Let us make an illustrative example. Suppose our token expression e is the word "cat", L is plain English, p is the English-speaking community, w our world, t our time, and c any ordinary context of communication. Consider also a list of candidate meanings m for "cat":

m_1 = cats (i.e. well-demarcated ordinary middle-sized material objects with whiskers, tail, hairs, paws, and so on).

m_2 = ever changing miscellaneous cat-shaped chunks of feline matter.

m_3 = cat-shaped fusions of undetached cat-parts.

m_4 = pet animals loved by someone.

m_5 = cats observed until 12 am or dogs that eat cat food observed after 12 am.

Now, of course, the proper intended meaning of "cat" should be m_1 (i.e. $\mu(\text{"cat"}) = m_1$). But why? Use, for sure, plays a role in determining the meaning of "cat". The question is whether this is enough to secure meaning *tout court*. And this is questionable for different reasons. I will mention three of them I deem especially interesting:

1) We can distinguish between the semantic conception of meaning and the pragmatic conception of meaning. Semantically, the meaning of a word is the (set of) things the word refers to. Pragmatically, instead, the meaning of a word is whatever an utterer intends to communicate by using that word in a given context of utterance. Rules of use seem much more relevant when we bring about our communicative intentions

169

than when we have to fix the reference of a word. So much so that meanings, understood semantically, should be stable and unique to their words, while use is flexible and adapts to the inputs of a given context of utterance. So, for example, in some contexts of utterance, we would go with m_4 as our meaning for "cat" – perhaps because we are talking with a friend of ours about the special bond between us and our cat Bruce. Pragmatically, to use "cat" to mean m_4 is just fine, but semantically it is not, especially considering that m_4 narrows down the (semantic) meaning of "cat" too much – i.e. some cats are no pets, e.g. feral cats and wildcats – and underspecifies it – i.e. beloved pet animals include dogs, hamsters, pigs, rabbits, parrots, and whatnot, so m_4 would serve equally well as the (semantic) meaning of "dog", "hamster", "pig", "rabbit", "parrot", and so on. Use has a lot of uses – no pun intended – in communication, but seems rather weak to secure (semantic) meaning.

2) Rules of use for a language could be conventions of some sort- Perhaps, Lewisian ones (cf. Lewis 1969): repeated patterns of communication that solve coordination problems between speakers and hearers of a given population. What coordination problems? Sharing of information which speakers and hearers might mutually benefit from. If so, one could argue that the meaning of "cat" is m_1 because there is a prevailing rule of use for "cat" according to which it is socially advantageous for us – as speakers and hearers – to communicate about cats in terms of an m_1-assignment rather than – say – in terms of an m_2- or

170

m_3-assignment. Perhaps, because it is easier to refer to cats in terms of an m_1-assignment, it accords better with our perceptual endowment and environment, social beliefs, and whatnot. This is interesting, to be sure, and I do think it does capture some aspects of meaning assignment, but it still fails to give us reasonably stable meaning assignments. Indeed, if rules of use are conventions, as discussed, then the use of a word crucially depends on the communicative interests and needs prevailing among the members of a population. Thus, if use determines meaning *tout court*, then the meaning of a word crucially depends on the communicative interests and needs prevailing among the members of a population. But such communicative interests and needs change through time and this fact under the current proposal, would put the meaning of our words in a sort of perpetual flux. Perhaps, this is what Wittgensteinians want: change of rules; change of meaning (cf. Wittgenstein 1974). But it is far from clear that this is what we should want too. First, because it seems objectionable that the literal meaning of a word should change at the changes occurring in the population using that word. If, say, at some future time t, the English-speaking population undergoes a change in the way English users communicate such that, at t, "cat" refers to all the cats except the black ones, which are instead referred to as "grimalkins". Grimalkins are considered evil spirits, emissaries of the devil. So, we define m_6 = all and only the cats that are not black. Be careful, grimalkins are not thought of as cats controlled by evil spirits, but as true demons that look like cats, but are not. As it happens, at t, social bigotry and religious supersti-

tion are rampant, so English users are wrong about black cats; black cats are cats. But if meaning is determined tout court by use and a change of rules prompts a change of meaning, then we should say that the English population at t get the semantic facts right, when in fact they do not. We could come up with an m_5-involving scenario to the same conclusion, *mutatis mutandis*. So, use alone is not enough of a "semantic glue" to latch our words onto their intended meaning.

3) Use does not determine meaning. In fact, use underdetermines meaning. Suppose we say that the meaning of our word "cat", for example, is fixed by an m_1-assignment because we use "cat" accordingly. The point is that there are several unintended, if not twisted, meaning-assignments for a given word that respect our use of it by far and large. Our use of "cat" does not seem to wobble much if instead of meaning m_1, it would mean m_2, m_3, m_4 or something even more bizarre along these lines:

> m_7 = cats that do not appear in George Perec's *Les Choses* or for an instant of time t, when everyone is asleep, a pair of socks.

Indeed, if "cat" means m_7, then the referents of "cat" are cats or a pair of socks. The latter is clearly an intruding referent, so one may wonder how could it be that "cat" can be assigned such a meaning all the while preserving our use of "cat". The reason is that the context of application for assigning the intruding meaning to "cat" – i.e. a zero-extension interval of time when no one is awake – is so peripheral and extemporaneous to be completely negligible. Thus, m7 is pretty

much consistent with our use of "cat" despite the fact that it is about as bizarre and unintended as a candidate meaning for "cat" could be. And we could easily come up with other gerrymandered, unintended candidate meanings. The fact that meaning is so underdetermined by use is a problem. If we want to provide proper meaning assignments while disqualifying the bizarre ones, resorting to facts of use is not enough because, more generally, our use of words does not seem constitutively fine-grained enough to provide *unique* (intended) meaning assignments once and for all. It lacks a fixing mechanism.

For those who wished meanings were stickier, this is bad news. But Lewis (1983, 1984) has a recipe for a "semantic glue": take a word; check its use; check the "magnetic pull" of its referents; stir; and the word's meaning is ready to be served. Less roughly, for Lewis, *ceteris paribus*, what determines the meaning of an expression is the *intrinsic eligibility* (i.e. naturalness) of that expression's referent. Thus, it is our use of "cat" plus the higher eligibility of cats as well-demarcated ordinary material objects that makes it so that $\mu($"cat"$) = m_1$, that is that "cat" picks out all and only the cats *qua* well-demarcated ordinary material objects[17]. This elegant and attractive theory is *Reference Magnetism*[18].

---

[17]Though, as I shall argue later on, things could more complicated than this. This is the expected result, but a certain Lewisian understanding of Magnetism could also end up trumping less than perfectly natural referents such as cats. Suppose we accept that naturalness tracks fundamentality and that fundamentality tracks a downward priority ordering from the larger to the smaller. Then, a bunch of quarks and leptons arranged catwise would be more eligible as a referent than well-demarcated middle-sized cats.

[18]Two things should be noted, though: first, the idea of Reference Magnetism even if popularised by Lewis was not originally due to Lewis himself, but – as Lewis himself acknowledges in Lewis (1983) – rather to Merrill (1980); second, the label "Reference Magnetism", now quite fashionable in the literature, was never proposed by Lewis himself,

Reference Magnetism is popular among Lewisians, but Lewisians often treat it incorrectly as a rather monolithic and perfectly understood thesis thereby overlooking certain aspects of it that are worth considering. In this work, we will show that different readings – stronger and weaker – of Magnetism are available and allow for very different meaning fixing-mechanisms. Without going into all the details, we can say that according to the stronger readings, eligibility trumps use, whereas according to the weaker readings, eligibility merely supports use[19]. The point is that Lewisians should accept only quite strong, trumping forms of Magnetism since weaker forms of Magnetism are either too weak or unmotivated to do justice to the original idea of having nature's joints playing the key role in fixing meaning[20]. But in so doing, Lewisians should also accept that the magnetic pull from nature's joints is of nihilistic kind: accordingly, the correct interpretation – say – of "There are cats" should be "There are particles arranged catwise" because the correct meaning of "cat" should be "particles arranged catwise". Without mincing words, the standard Lewisian package supports mereological nihilism. The bad news is that the problem for us Lewisian Universalists, who wanted to love both Magnetism and Unrestricted Composition, is serious and calls for action. The good news is that the problem can be solved.

but rather by Harold T. Hodes (1984).

[19]Later, we will get clearer on this. For now, it should be noted that Lewis himself is ambivalent between different readings. In Lewis (1983, 1992), for example, Lewis leans towards weaker forms of Magnetism, whereas in Lewis (1984, 1993a), Lewis opts for stronger forms of Magnetism. It is quite accepted that Lewis never fully endorsed the metasemantic theory he discusses in (1983) – in fact, for Lewis, it was a mere toy-theory of linguistic content –, but it usually accepted that Lewis *believed* in naturalness. Schwarz (2014), however, surprisingly denies it.

[20]Indeed, stronger, trumping forms of Magnetism are the most popular. See below for more details.

But first, we have to finish our preliminary discussion of the package.

Cognitive Magnetism

We complete our presentation with what we have called Cognitive Magnetism. This is Magnetism for thoughts or mental contents. It is safe to say that the case for more or less eligible/natural thoughts has not been discussed in the literature as much as the case for more or less eligible/natural referents[21]. But, despite the little attention attracted, Lewis (1983, 1984, 1993a) is vocal about it and stresses – even if a bit sketchily – that the one and the same fixing-mechanism applies to both linguistic and mental content. Consider Lewis's own words in footnote 6 of Lewis (1993a, p. 172, italics added):

> I do not think reference is entirely up to our choice. Some things are by their nature more eligible than others to be referents or objects of thought, and when we do nothing to settle the contest in favour of the less eligible, then the more eligible wins by default [...]

Or those in Lewis (1983, pp. 374-375):

> Set language aside and consider instead the interpretation of thought. [...] The principles of charity [plus naturalness for mental contents] will impute a bias toward believing that things are green rather than grue, toward having a basic desire for long

---

[21]Difficult to say why, but perhaps it has to do with the fact that language and thought are closely related so much so that the same sort of content fixing-mechanism would hold for both.

life rather than for long-life-unless-one-was-born-on-Monday-and-in-that-case-life-for-an-even-number-of-weeks. In short, they will impute eligible content, where ineligibility consists in severe unnaturalness of the properties the subject supposedly believes or desires or intends himself to have. [...] Believing this or desiring that consists in part in the functional roles of the states whereby we believe or desire, but in part it consists in the eligibility of the content. And this eligibility to be thought is a matter, in part, of natural properties.

The first passage quoted makes it clear that, for Lewis, as there are more or less eligible/natural thoughts so there are more or less eligible/natural referents[22]. The second passage quoted, instead, presents Lewis's preferred view on mental content determination: namely, for a subject S having a mental state s with mental content c is (i) for c to fit the typical functional role of s (i.e. the typical environmental causal input-behavioural output associated with s) and (ii) for c to be eligible/natural[23].

---

[22]Actually, for Lewis, mental content *determines* linguistic content. So, for example, for Lewis, the word "cat" denotes cats because we want to convey certain thoughts about cats; or, less roughly, the word "cat" denotes cats because we use the word "cat" to communicate certain beliefs, desires, or other intentional states about cats. This, though, raises some questions on whether Reference Magnetism is really needed once we have some sort of Cognitive Magnetism. Indeed, it seems that for Lewis the referents of our words should be those that accord well with the communicative intentions associated with the use of those words and, in order to avoid the twisted interpretations of our thoughts, naturalness enters the picture to fix mental content. But once mental content is fixed, it seems smoother to then fix linguistic content – after all, our words should convey our thoughts. Thus, it is not entirely clear whether we should need Reference Magnetism besides some sort of thought Magnetism, or whether the latter is enough. Exegetically, though, things can get quite murky given Lewis's reluctance to develop a detailed treatment of naturalness in language and thought. Indeed, some (especially Schwarz 2014) have even pointed out the role that naturalness plays in Lewis is much more limited than what we could have anticipated. For further discussion see Schwarz (2014).

[23]The actual picture is more complicated. Details are not important here. But see

This is a very specific view, rooted in Lewis's favourite functionalist theory of the mind (Lewis 1966, 1972, 1990). But for our present concerns, Lewisians need not have to accept it. In fact, for our discussion, it is enough that Lewisians accept that as naturalness fixes reference by assigning eligible content to our language so it fixes thought by assigning eligible content to our thinking. In other words, Lewisians should just accept that naturalness fends off twisted interpretations of our thoughts by exerting a "magnetic pull" towards eligible mental content just as it fends off twisted interpretations[24] of our referents by exerting a "magnetic pull" towards eligible semantic content. And this is an obvious and rather uncontroversial position for Lewisians to hold[25]. So, I think Lewisians would have no qualms with putting Cognitive Magnetism in their toolkit. That is not the end of the story, though; there are few more relevant details to discuss about our understanding of Cognitive Magnetism.

First, Cognitive Magnetism has been formulated, in this work, as a thesis regarding especially *singular thoughts*, that is those thoughts that are *about this* or *that* particular object: for example, the sort of thought we have when upon looking at Bruce the cat we say to ourselves "That must be the sweetest cat! Look how it purrs. Lovely.". The reason behind this is, primarily, that when we ordinarily think "There are some *os*", in many cases, we do so by being *acquainted with* some particular object *o*. Say that we are acquainted with some particular *o* iff we have an intentional thought about that *o*; in

---

Schwarz (2014) .

[24]Twisted interpretations are those interpretations that despite fitting our cognitive and linguistic dispositions, assign bad/unintended content to them.

[25]Of course, I am not suggesting that it should be obvious and uncontroversial in general, but that it should be so *for Lewisians* in general.

other words, iff we have a thought directed upon that o. When we are thus acquainted with a given o, we say we have singular thoughts about that o[26]. Thus, singular thoughts are at the basis of (many of) our ordinary ontological beliefs-forming mechanisms, and, hence, whatever consequences the standard Lewisian package has for our singular thoughts, *ipso facto*, it has consequences for (many of) our ordinary ontological beliefs. This, in turn, is important for us because, as we have discussed in detail in Chapter 2, Universalists should not be dismissive or dodgy about our ordinary ontological beliefs-forming mechanisms, but should find a way to subsume them into a uniform permissive ontological beliefs-forming mechanism. In Chapter 2, we relied on naturalness to amend Universalism and defy charges of incoherence from Conservatism. So, given that we are going to show how the Lewisian package – and the role naturalness plays in it – pulls our thinking and talking towards Nihilism, it is even more diriment for us Universalists to address the case from singular thoughts.

Second, Cognitive Magnetism is needed because even if singular thoughts are direct thoughts about some particular o and, thus, thoughts that, in a sense, make us in "cognitive contact" or "epistemically intimate" with o (cf. Bach 1987, p. 12), they are not immune to unintended or twisted content assignments. To see this, take again our previous case of us looking at Bruce

---

[26]Paradigmatic examples of singular thoughts are *perceptual thoughts* (i.e., perception-based thoughts), where we get ourselves acquainted with a lot of different objects, e.g. tables, chairs, bookshelves, people, dogs, cats, flowers and so on, and which is characterized by use of singular terms (proper names e.g. "Bruce", definite descriptions e.g. "Bruce the cat", demonstratives e.g. "this" and "that", and pronouns e.g. "it"). A ready-made case of perceptual thought is the previous one we gave about us looking at Bruce the cat and thinking of Bruce that it was a very sweet cat. In this case, notice, that singular thoughts about Bruce are made available by the perceptual link (i.e. vision) we entertain with Bruce.

the cat and (perceptually) thinking about it as the sweetest cat. If, as it seems, our (perceptual) thinking is directed upon Bruce, it is Bruce that should be the obvious content of our singular thought. But why is it so? Is it because Bruce, in that scenario, causes our singular thoughts about it? This is an attractive hypothesis, but it misfires because our singular thought could also be caused by some collection of particles arranged catwise or by some stream of photons emitted by the cat and hitting our retinas. Is it, then, because Bruce *makes us* disposed, in that scenario, to have singular thoughts about it? This is an interesting, but again failing hypothesis because, under some very minor adjustments, we can get assigned ineligible content – for instance, Bruce-the-cat-unless-one-was-born-on-Monday-and-in-that-case-a-grimalkin-for-an-even-number-of-weeks – and still be disposed to have beliefs about Bruce the cat. Thus, unless some fixing-mechanism for singular thought enters the picture, it is *deja vu* for us: underdetermination of content assignment by evidence paves the way of ineligible content for our singular thinking.

Cognitive Magnetism dispels *deja vu* by stating that when we have singular thoughts about this or that o, our thoughts are about o and not some other o^* ($o \neq o^*$) because o rather than o^* exerts magnetism for us; that sort of magnetism that makes us cognitively focused on o rather than o^*. Thus, in our case, when we have singular thoughts about Bruce the cat, our thoughts are about Bruce the cat rather than a collection of particles arranged catwise, streams of photons emitted by Bruce and hitting our retinas, or Bruce-the-cat-unless-one-was-born-on-Monday-and-in-that-case-a-grimalkin-for-an-even-number-of-weeks because only Bruce cog-

179

nitively magnetizes us thereby making us cognitively focused just on Bruce. This magnetic pull from Bruce is ensured by Bruce's naturalness/eligibility and ensures that "cognitive contact" or "epistemic intimacy" we would expect to have with Bruce when we think about Bruce by being acquainted with it.

Or so we thought and hoped. Indeed, this elegant solution is in peril for the very same reasons we have teased before: namely, the reading of Magnetism and the role naturalness plays for it. As we are going to see shortly, if Lewisians accept a weaker reading of Magnetism, then Magnetism plays no meaningful role in the Lewisian package and its fixing powers are a mirage; if, instead, Lewisians accept the more usual, trumping reading of Magnetism, then magnetism pulls our singular thought, just like our talk, towards *nihilistic content* so as that when, say, we think "That is Bruce!", we should really be interpreted as thinking "That is a collection of particles arranged catwise!". Note that this "collapse" of our talk and thought onto Nihilistic interpretations has also the unpleasant consequences of making singular thinking and referencing *impossible*. After all, there is no context of utterance where we can express singularism in our thinking and saying. This is unacceptable for the Lewisian Universalists.

* * *

Time to take stock. In what follows, we will develop the predicament of nihilistic pull from magnetism and present a trilemma for the Lewisian Universalists: giving up a key role for naturalness, i.e. Magnetism; giving up Universalism about composition in favour of nihilism about composition; or

180

giving up the Lewisian degree-theoretic conception of naturalness that lies at the heart of the Lewian package. After some serious scrutiny, it will become evident that the Lewisian degree-theoretic conception of naturalness has to go in favour of the Schafferian or scientific or egalitarian conception of naturalness, according to which the following two tenets hold:

(Scientific Relevance): Some property P or object x that has P qualifies as natural iff P or the x that has P is explanatorily relevant for the sciences; otherwise, P or the x that has P qualifies as unnatural.

(Egalitarianism): If some property P or object x that has P qualifies as natural, then P or the x that has P is said to be natural *simpliciter*; otherwise, P or the x that has P is said to be unnatural simpliciter.

The Schafferian conception of naturalness has no favourite child: BEING A GLASS OF BEER, BEING A DOG, BEING A CANCER CELL, HAVING $\frac{1}{2}$ SPIN, HAVING CONSCIOUSNESS, BEING AN HOLOBIONT, and so on, are all natural properties equally carving nature at its joints. On the contrary, BEING GRUE, BEING A TROUT-TURKEY OR NOT TOO FAR AWAY FROM A TROG, BEING NOT TOO DISTANT FROM A GLASS OF BEER ON A BLUE MONDAY, and so on, are all unnatural properties equally failing to carve nature at any of its joints.

We will argue that the Schafferian conception of naturalness is what saves the day for Lewisian Universalists. Of course, revisions to the Lewisian package will be due as it will no longer be possible to keep certain ingredients of the standard Lewisian recipe in place, especially the Downward Thesis

of mereological naturalness/fundamentality. Moreover, some Lewisian Universalists may worry that the Schafferian scientific conception "flattens out" nature's joints way too much, thereby jeopardising the attractive and popular idea of some hierarchy in nature. To this and other worries, we will reply by rejecting the standard Lewisian identification of naturalness and fundamentality[27] and by introducing a gradable notion of "Contextual Salience"[28]. Accordingly, it will be true that for some properties P and Q, (i) P and Q are equally natural, but P is more or less fundamental than Q (or vice versa), and (ii) depending on a given context of inquiry, P can be more or less salient than Q for our explanatory and/or descriptive purposes. But before we can address these questions, we need first to discuss our predicament.

3.3 The Predicament

3.3.1 Two Cases and a Scorekeeping Game

Let us begin by considering the following two toy scenarios from everyday life:

CASE 1: We are walking towards the living room of my house. As we enter, we notice a big mess: broken glass on the floor, scattered sheets, dirt from the plant pots all over the place, Bruce the cat and Milo the dog with a guilty look. Disconsolate, I start saying to you: "Unbelievable! The cat and the dog must have played together again. Look what a

---

[27] In this respect, we will follow certain suggestions from Bennett (2017) and Weatherson (2006).

[28] This will bear some similarity with the proposal one finds in Taylor (2016).

mess.". You ask me: "They must have, indeed. But how can you really be mad at them? They are too cute.". I say: "I know, right? Luckily, the laptop is safe ... Well, let's clean this up. Can you please bring me the broom, the dustpan, and some cleaning rags out there?". You reply: "Sure thing".

CASE 2: It's a nice sunny day. You are walking into a bookshop looking for Stephen King's new book. You see a book that might be the book you are looking for and think "That book on that shelf could be *Holly.*". You grab it from the shelf and think (correctly) "Yeah, this should be it.". Then, you pay for it and go out satisfied thinking "I hope it will be as good as *Salem's Lot.*".

Case 1 concerns our language, while Case 2 our thoughts. Our aim, in both cases, is to fix our referents.

The plan unfolds as follows: first, we develop a score function that allows us to rank candidate meanings for expressions of our choice; second, we choose some expressions and some candidate meanings for them; third, we use our score function which candidate meaning wins the game and gets to fix the content and, thus, the meaning of our expressions. At the end of day, it is a simple scorekeeping game, loosely based on Lewis (1979), whose outcome will allow us to foster our considerations on Magnetism, naturalness, and the standard Lewisian package.

First stage. We start our game by developing our score function. We are talking about a function that assigns a score to ordered pairs of expressions (words or thoughts) and candidate meanings for those expressions, i.e. f :

expressions $\times$ candidate meanings $\rightarrow$ score. The score has a numerical value n for some $[0,1]$. Thus, if $n = 1$, f assigns the ordered pair $< e_i, m_i >$ a perfect score; if $n = 1$, assigns the ordered pair $< e_i, m_i >$ the failing score; if instead $0 < n < 1$, f assigns the ordered pair $< e_i, m_i >$ a more or less decent score, depending of course on whether the value of n approximates 0 or 1 (e.g. a good score could be that for $n = \frac{2}{3}$, whereas a bad score could be that for $n = \frac{1}{3}$). When an ordered pair $< e_i, m_i >$ gets a perfect score, we say that the candidate meaning m_i has won the game for its related expression E_i thereby fixing its meaning. Of course, in a Lewisian setting, the score must keep track of two further parameters: eligibility and use. We will go into these details below.

Second stage. Now we choose some expressions of interest and advance some candidate meanings for them. Our expressions of interest are the definite descriptions "Bruce the cat" and "Milo the dog" from Case 1, and the perceptual demonstrative thoughts "that book" and "that shelf" from Case 2. Our candidate meanings are the following ones:

a) "Bruce the cat"

$m_1 =$ Bruce the cat

$m_2 =$ particles arranged catwise

$m_3 =$ grimalkin (cat-shaped evil spirit)

$m_4 =$ lampcat (half cat + half lamppost)

$m_5 =$ Bruce the cat's undetached parts

184

b) "Milo the dog"

m_1 = Milo the dog

m_2 = particles arranged dogwise

m_3 = Old Shuck (dog-shaped ghostly spirit)

m_4 = trog (dog + tree)

m_5 = Milo the dog - one atom

c) "That book"

m_1 = Stephen King's new book

m_2 = particles arranged bookwise

m_3 = Stephen King's new book or a bleen glass of beer

m_4 = nosebook (nose + book)

m_5 = Stephen King's new book's undetached parts

d) "That shelf"

m_1 = the shelf where Stephen King's new book lie

m_2 = particles arranged shelfwise

m_3 = the shelf where nosebooks lie on leap years

m_4 = shelflower (shelf + flower)

m_5 = the shelf where Stephen King's new book lie a speck of dust on it

Third stage. Once we have all the ingredients, it is time to make good use of our score function. That is, we ask ourselves which m_i (1ì4) fixes correctly, if at all, the meaning of our expressions a), b), c), and d) and, thus, gives us back, if at all, the correct interpretations of them. In other words, for which m_i we get $f(\text{"Bruce the cat"}, m_i) = 1$, $f(\text{"Milo the dog"}, m_i) = 1/f(\text{"that book"}, m_i) = 1/f(\text{"that shelf"}, m_i) = 1$? Is it the case, perhaps, that $f(\text{"Bruce the cat"}, m_1) = 1$, that $f(\text{"Milo the dog"}, m_3) = 1$, that $f(\text{"that book"}, m_5) = 1$, or that $f(\text{"that shelf"}, m_2) = 1$? Of course, the answer is that, in all four cases, it should be m1 that wins the game and, thus, fixes the meaning of all our expressions. But why?

3.3.2   Magnetisms: Weak, Intermediate, and Strong

According to the standard Lewisian package, it should be m1 that fixes the meaning of our expressions "Bruce the cat", "Milo the dog", "that book" and "that shelf", because m_1 is more eligible (natural) and, hence, it exerts a higher magnetic pull. This grants m_1 a perfect score in each case. This is the simple and attractive standard Lewisian move, but attractive as it may be, it hastens to conclude that it may not really be in the position to establish. To see this, we have to dig deeper in how Magnetism works in the standard Lewisian package.

It is not uncommon in the Lewisian camp to treat Magnetism as a "perfectly understood, unproblematic, and certain" thesis, but, as Schwarz (2004, 2014)[29] and Warren (in press, see especially footnote 4) notice, Magnetism

[29]Schwarz (2004) refers to his blog post "Reference Magnetism" on Schwarz's own website. I decided to mention it because, there, Schwarz offers an illuminating, even if brief,

admits in fact of stronger and weaker readings, each of which allowing for different results[30]. It all depends on whether the magnetic pull of eligibility/naturalness overrides – and if so, how much – facts about use. For example, eligibility could not trump use at all but rather serve the purpose of making use more robust (e.g. by making principles of interpretative charity more effective as in Lewis 1983, or by selecting "straight" rather than "bent" grammars rules as in Lewis 1992), or it could trump use (e.g. as in Lewis 1984, 1993a, Sider 2009, 2011, Weatherson 2003). We can put things in better order by following Schwarz (*ibid.*) and, to a certain extent, Chalmers (2012, Ch. 9, Twentieth Excursus)[31] and proceeding to define three different versions of Magnetism as follows[32]:

(Weak Magnetism): Given an expression e and candidate meanings $m_1, ..., m_n$ for e, each of which having a different degree of eligibility, the meaning of e is the most eligible candidate meaning m_i that respects the facts of use of e.

(Intermediate Magnetism): Given an expression e and some candidate mean-

discussion about Weak, Intermediate, and Strong Magnetism. This distinction is absent in Schwarz (2014), the sole systematic paper Schwarz devotes to the question of Magnetism.

[30]Glosses such as "*ceteris paribus* eligibility trumps use", "meaning is assigned by striking the best balance of eligibility and use", or "meaning is determined in part by eligibility and in part by use" are not very helpful since they leave all the ambiguity there. After all, these glosses do not clarify at all *how much* magnetism is exerted by natural properties/objects when we have to fix the meaning of an expression. Interestingly, in Lewis (1984, especially pp. 227-229 and footnote 14), Lewis seems conscious of this but is confident the problem can be overcome.

[31]Note that the Chapter 9 along with its Twentieth Excursus come from the online-only extended edition of Chalmers's *Constructing the World* (2012). As he clarifies on his website, such material has been removed from the printed version for reasons of space.

[32]The taxonomy of Magnetism presented here is indebted and inspired to Schwarz and Chalmers, but follows its own path. So, the reader should not expect a faithful restatement of Schwarz and Chalmers's taxonomic proposals.

ings $m_1, ..., m_n$ for e, each of which having a different degree of eligibility, the meaning of e is the most eligible candidate meaning m_i that respects the facts of use of e; otherwise, in case facts of use allow for indeterminacies, irrational judgments, or gruesome dispositions among e-users, the meaning of e is the most eligible candidate meaning m_k, if $m_i \neq m_k$.

(Strong Magnetism): Given an expression e and some candidate meanings $m_1, ..., m_n$ for e, each of which having a different degree of eligibility, the meaning of e is the most eligible candidate meaning m_i.

These three readings of Magnetism are clearly different[33]. Indeed, according to Weak Magnetism, the meaning of an expression does not have to be the most eligible candidate meaning for that expression *tout court*, but only the most eligible candidate meaning relative to the facts of use associated with that expression – of course, the most eligible candidate meaning relative to the facts of use could be less eligible than the most eligible candidate meaning tout court. Thus, according to Weak Magnetism, eligibility *never* trumps use, but rather supports it. Intermediate Magnetism, instead, agrees with Weak Magnetism while admitting some notable exceptions: indeed, when and only when facts of use do not elicit a clear winning candidate meaning,

---

[33]Instances of Weak Magnetism could be found in Lewis (1983, 1992); Intermediate Magnetism in Lewis (1984, 1993a, especially footnote 6), Weatherson (2003), Warren (in press) and Schwarz (2014) (though Warren and Schwarz discuss it only since they are against Magnetism); Strong Magnetism in Sider (2011). For a different albeit related taxonomic work see Chalmers (2012, Ch. 9, Twentieth Excursus). The reader should be warned also that Warren (2023) and Schwarz (2014) do present a form of Intermediate Magnetism – what they call "Magnetism of the Gaps" and "Tie-Breaking Magnetism" respectively – but do not endorse it. In fact, both Warren and Schwarz are against the very idea of Magnetism (referential or other).

perhaps because speakers have no decisive and considered dispositions to use a certain expression with a certain meaning, then meaning should be provided by the most eligible candidate meaning *tout court*. Thus, according to Intermediate Magnetism, eligibility *sometimes* does trump use. Strong Magnetism, finally, says that the meaning of a given expression should be the most candidate meaning *tout court*, no matter whether use is respected or not. It is up to nature's joints to define whether we talk/think correctly or not. Use can have a felicitous alignment with nature's joints, but whether this happens or not does not, ultimately, matter. Thus, according to Strong Magnetism, eligibility *always* trumps use[34].

Getting clear on which Magnetism we hang our hopes on is not insubstantial. On the contrary, it is a substantive question with substantive consequences. Indeed, the three forms of Magnetism we have presented – weak, intermediate, and strong – disagree substantially on which facts are decisive in securing meaning and on which is the proper context of action that pertains to Magnetism. Such disagreement leads to different fixing-mechanisms for meaning which, in turn, leads to different meaning assignments or different explanations for one and the same meaning assignment.

Take again our expressions "Bruce the cat", "Milo the dog", "that book", and "that shelf", and ask again which candidate meaning should get a perfect score. Under Weak Magnetism we have that $f(\text{"Bruce the cat"}, m_1) = 1$, $f(\text{"Milo the dog"}, m_1) = 1$, $f(\text{"that book"}, m_1) = 1$, and $f(\text{"that shelf"}, m_1) = 1$ because of all the candidate meanings, m_1 is the most eligible candidate

---

[34]Or perhaps, in most cases. The point is that for Strong Magnetism the ultimate meaning-fixer is naturalness; it is naturalness that, ultimately, decides which meaning should be right or wrong. So, use plays only an ephemeral role, if any.

that respects our use, even if – note – the most eligible candidate meaning *tout court*, in each case, should be m_2. Weak Magnetism assigns a higher weight to facts of use than to facts of eligibility and, thus, exerts a modest magnetic pull, mostly, to strengthen principles of interpretative charity. A magnetised principle of charity would say, perhaps, that when we interpret a speaker's utterances or thoughts, we should interpret them in the most eligible way *consistent with* the facts of use prevailing in the speaker's community.

Under Intermediate Magnetism, instead, we could have that $f(\text{"Bruce the cat"}, m_1) = 1$, $f(\text{"Milo the dog"}, m_1) = 1$, $f(\text{"that book"}, m_1) = 1$, and $f(\text{"that shelf"}, m_1) = 1$, but it crucially depends on whether the relevant facts of use underlying these expressions are robust and safe enough to avoid meaning indeterminacy or indecision on the part of the speaker's/thinker's dispositions. In fact, if we consider the candidate meaning m_5, it is only to be expected that speaker's dispositions will face underdetermination thereby prompting meaning indeterminacies and indecisions. When this happens, Intermediate Magnetism suggests that facts about eligibility should trump use and fix meaning by assigning the more eligible candidate. So, if facts about use do not resolve in favour of $f(\text{"Bruce the cat"}, m_1) = 1$, $f(\text{"Milo the dog"}, m_1) = 1$, $f(\text{"that book"}, m_1) = 1$, and $f(\text{"that shelf"}, m_1) = 1$ *or* $f(\text{"Bruce the cat"}, m_5) = 1$, $f(\text{"Milo the dog"}, m_5) = 1$, $f(\text{"that book"}, m_5) = 1$, and $f(\text{"that shelf"}, m_5) = 1$, then by Intermediate Magnetism, we should go for the m_1-assignments because m_1-assignments are more eligible than m_5-assignments.

Finally, under Strong Magnetism we have that $f(\text{"Bruce the cat"}, m_2) = 1$, $f(\text{"Milo the dog"}, m_2) = 1$, $f(\text{"that book"}, m_2) = 1$, and $f(\text{"that shelf"},$

$m_2) = 1$ because m_2 is the most eligible candidate meaning. That is, under Strong Magnetism, we follow the lead of nature's joints and see where the ultimate source of magnetic pull lies. There is where meaning gets truly – rather than approximately – fixed. In a Lewisian setting, the ultimate source of magnetic pull lies at the level of mereological atoms, e.g. subatomic particles and spacetime points. The more eligible the meaning, the more our language and thought align with nature's joints; the more our language and thought align with nature's joints, the closer we get to the truth. So, for Strong Magnetism, despite the appearances and our dispositions to talk/think otherwise, m_2-assignments, e.g. "particles arranged catwise" for "Bruce the cat", should be favoured. All the other candidate meanings are imperfect fixers, and imperfect fixers should lose, not win the game[35].

As we have seen, naturalness can play three very different roles in securing meaning: having meaning best fitting use (weak); saving meaning from indeterminacies and/or underdetermination (intermediate); and hooking meaning to nature's joints (strong). So, Lewisians should be careful when choosing their preferred Magnetism because one Magnetism is not the same thing as another and their choice does not come without its consequences.

3.3.3 Towards Strong Magnetism

At this point, the obvious question is: "Which Magnetism should Lewisians choose, if any?" Our quick answer is: *Strong Magnetism.* We come to this conclusion once we consider that Weak Magnetism jeopardizes the original

---

[35]This is very similar to the "metaphysical semantics" we find in Sider (2011). The Lewisians that happen to be fundamentality lovers are prone to opt for Strong Magnetism and give facts about use a very minor role.

motivation behind Magnetism, while Intermediate Magnetism – even if much more promising – cannot offer a clear-cut policy that could fulfill its promises. Strong Magnetism, on the other hand, retains the the original spirit of Magnetism while providing a clear-cut policy for meaning-assignment. The problem is that Strong Magnetism supports a form of Nihilism that contradicts the Lewisian Book of the World that grows around it. More details are due.

According to Weak Magnetism, we said, naturalness exerts only a thin magnetic pull. In a certain sense, considering that eligible meanings are meanings that best-fit patterns of use, according to Weak Magnetism, fit trumps eligibility. After all, facts about use are much more important to determine meaning than facts about eligibility. So much so, that Weak Magnetism could avoid resorting to naturalness at all when fixing meaning; an appeal to salience would as well. Facts about salient meanings, that is meanings that stand out in virtue of their association with the conventions prevailing in a given population, are more than enough to play the weak magnetic role evoked by Weak Magnetism. Facts about salient meanings, note, are sociolinguistic facts selected by chance and contingency or, perhaps, are facts having to do with our own cognitive architecture (e.g. our preferences, our psychological associations, and so on). If that is the case, the contribution of nature's joints in securing meaning vanished into thin air and this fact jeopardizes the very idea behind Magnetism: namely, having joints in nature playing an active, even decisive, role in fixing meaning. If that is not the case, then Magnetism is useless. Thus, Weak Magnetism is no good for Lewisians.

Things are more complicated with Intermediate Magnetism. First, as Schwarz (2014) and Warren (2023) argue, there seems to be something pre-

posterous and arbitrary in the idea that the magnetic pull from nature's joints can be turned on and off like a light switch: in certain contexts, it is ephemeral, in fact, it gets trumped by use, whereas in some other contexts, it is an overriding force. This is problematic, first, because there is no clear-cut policy behind it, and, second, because it seems to go against the original spirit of naturalness as the "saving constraint" for reference. Consider what Lewis says (1984, pp. 226-227, italics added):

> Referring isn't just something we do. What we say and think not only doesn't settle what we refer to; it doesn't even settle the prior question of how it is to be settled what we refer to. Meanings - as the saying goes - just ain't in the head. [..] [The saving] constraint looks not to the speech and thought of those who refer, and not to their causal connections to the world, but rather to the referents themselves. Among all the countless things and classes that there are, most are miscellaneous, gerrymandered, ill-demarcated. Only an elite minority are carved at the joints, so that their boundaries are established by objective sameness and difference in nature. *Only* these elite things and classes are eligible to serve as referents.

So, according to the original spirit of Lewis's "saving constraint" spirit, the magnetic pull from nature's joints, if any, cannot be ignored: either it matters in all contexts or it matters in no context at all; there is no on-off switch[36].

---

[36]It seems to me that Intermediate Magnetism would end up violating the Lewisian saving constraint also through tolerance of certain stipulative acts. Indeed, suppose that as speakers of our community, we introduce by means of a *stipulative definition* the expression

Maybe, though, Intermediate Magnetism can be improved. Indeed, sometimes, we hear Lewisians talking of Magnetism in terms of compromising between facts about eligibility and facts about use. We could define this as follows:

(Intermediate Magnetism)*: Given an expression e and some candidate meanings $m_1, ..., m_n$ for e, each of which having a different degree of eligibility, the meaning of e is the candidate meaning m_i that strikes the best balance between eligibility and use.

According to Intermediate Magnetism*, magnetism is a balancing, rather than pulling, force that tries to put eligibility and use on equal footing. Maybe, then, there are contexts where facts about use are stronger and, thus, sway the balance in favour of use, and there are contexts where facts about use are weaker and, thus, sway the balance in favour of eligibility. The point is, once again, which contexts are which.

Perhaps, the Intermediate Magnetist* would hold that when there are prevailing conventions associated with an expressions, that expression should have a meaning that is eligible but, above all, consistent with the prevailing convention. For instance, the expression "cat" should refer to all and only the cats, i.e. well-demarcated middle-sized felines with whiskers, fur, and so on, because a cat-assignment is (i) eligible, but above all (ii) consistent with the prevailing convention whereby "cat" are *defined as* "well-demarcated middle-

---

"lampcat" as referring to gerrymandered sums of cats and lamps. Given the stipulative definition, "lampcat" should be used as we said. Naturalness is not supposed to trump clear-cut facts about use. But, then, *contra* Lewis, our language is well-placed to tolerate *ineligible referents*.

sized felines with whiskers, fur, ...". Conventional definitions are analytic, and eligibility should not trump analyticity; if anything, it should sustain it.

On the other hand, the Intermediate Magnetist* would hold that in cases of underdetermination and/or indeterminacy of reference, in absence of prevailing conventions, an expression should have a meaning that is consistent with facts about use but, above all, eligible. For instance, it is underdetermined whether "Bruce the cat" should refer to Bruce the cat, i.a. a well-demarcated domestic cat, a sum of undetached cat-parts, or a cat-shaped mass of feline tissue. Seemingly, we have no convention that would settle the contest once and for all. Therefore, we trump facts about use and proceed to assign the more eligible referent by default, i.e. Bruce the cat[37].

At first glance, this looks attractive. However, there are issues. Consider, again, the case of "Bruce the cat". We said this expression is referentially underdetermined and/or indeterminate. Thus, we fix its reference by resorting to eligibility. We said the candidate winner was Bruce the cat as a well-demarcated domestic cat.

But why it cannot be that the candidate winner for "Bruce the cat" is a more eligible referent, perhaps the *most* eligible one, e.g. a bunch of particles arranged catwise? The Intermediate Magnetist*, as I understand it, would likely reply that the referent should not be the most eligible because if this would mean violating relevant facts about use, e.g. "Bruce the cat" is a singular term and, thus, should have singular rather than plural reference; the grammar of subject-verb agreement has it that phrases such as "Particles arranged catwise *is* purring" are grammatically ill-formed and, thus, make

---

[37]This seems in the spirit of Lewis (1984, footnote 6).

no sense.

All this is certainly true. However, previously, we agreed that, in contexts riddled by referential underdetermination and/or indeterminacy, facts about eligibility should trump facts about use. But now facts about use come back and trump facts about eligibility. This is strange. Of course, this does not mean that it is not true. Perhaps, this is how the Intermediate Magnetist* expects the balancing act between eligibility and use to go. My point is still the same, though, Intermediate Magnetism* has no principled approach to the balancing act to offer and, in the absence of one, we are but left wondering how and when *exactly* magnetism is supposed to work.

The only option left is Strong Magnetism. As we said earlier, Strong Magnetism accepts the full force joints in nature can exert. No balancing, no on-off, no compromise. Eligibility always trumps use because, ultimately, what matters is not which candidate meaning best fits or balances with our use, but rather which candidate meaning has the righteous force to pull our talk and thought in the right direction. In short, which candidate meaning carves nature at the joints. If our conventions or dispositions to talk and think would end up agreeing with the verdict from the world, it could be felicitous, but, ultimately, nothing hinges on this. Accordingly, it is not the scoring function defined in terms of the ordered pairs $<$ "Bruce the cat", Bruce the cat $>$, $<$ "Milo the dog", Milo the dog $>$,
$<$ "that book", Stephen King's new book $>$, and
$<$ "that shelf", the shelf where Stephen King's new book lie $>$ that would get a perfect score, despite the fact that m1-assignments are relatively eligible (perhaps, it could get a score of $\frac{2}{3}$); it is rather the scoring function defined in

196

terms of the ordered pairs $<$ "Bruce the cat", particles arranged catwise $>$,

$<$ "Milo the dog", particles arranged dogwise $>$,

$<$ "that book", particles arranged bookwise $>$,

and $<$ "that shelf", particles arranged shelfwise $>$ that gets a perfect score, because m_2-assignments are the most eligible meaning assignments.

3.3.4 Nihilistic Collapse

Strong Magnetism is radical, no doubt, but it breaks the tie and gives us back a powerful, neat, nonarbitrary story about how referential magnets are supposed to work. We have a source (joints in nature), a vector (Referential Magnetism), and a target (our talk and thought). No dubious middleman. Moreover, it effectively epitomizes the original realist spirit. I think Strong Magnetism is the best form of Magnetism Lewisians can hope for and if Lewisians are serious about magnetism, then they should accept Strong Magnetism. The obvious, evident red flag is that once the standard Lewisian package is supplemented with Strong Magnetism, some sort of *mereological nihilism* inevitably knocks at the door.

Recall that, for the standard Lewisian, the world mereologically decomposes downwards into increasingly fundamental/natural levels. The bottom level, presumably, is made up only of *mereological atoms* or *simples*, i.e. partless objects, which, for all we know, in our world, could comprise subatomic particles (e.g. quarks and leptons) and/or spacetime points. This means that, for the standard Lewisian, the most fundamental/perfectly natural objects are mereological atoms such as quarks, letpons, and perhaps

spacetime points. And this, in turn, means that, for the standard Lewisian, mereological simples such as quarks, letpons, and perhaps spacetime points, when suitably arranged such-and-suchwise[38], are the most eligible referents exerting the highest degree of magnetic pull; higher, that is, than that exerted by any (nontrivially) composite object, e.g. trees, glasses of beer, DNA molecules, dogs, cats, people, carbon-14 isotopes, skyscrapers, and so on.

Thus, for the standard Lewisian, singular referring expressions such as "the tree", "the glass", "the dog", "the molecule", *should* have their meanings fixed not by composite objects – in this case, trees, glasses, dogs, and molecules – but rather by their respective noncomposite microconstituents arranged such-and-suchwise – in this case, simples arranged treewise, glasswise, dogwise, moleculewise[39]. And we could scale up the range of magnetism so as to include sentences besides singular referring expressions. Nothing prevents us from doing it. In this case, we would have to fix truth-conditions for sentences rather than referents for referring expressions. Accordingly, we could take some sentences of plain English such as:

"There is a speck of dust on this shelf"

"The dog is on the sofa"

---

[38]This proviso is important. Indeed, for the magnetic pull of quarks, leptons, and spacetime points to be meaningful for our talk and thought, it must be the case that these mereological simples count as referential magnets. To count as referential magnets, then, these simples must underlie our referential targets and exert their pull from below, so to speak. This is the case for simples arranged such-and-suchwise, not for any arrangements of simples spread over the spacetime field. Otherwise, our talk and thought would be pulled from all directions and for reference-fixing-mechanisms would be utter chaos.

[39]Earlier we used the intuitive gloss "particles arranged such-and-suchwise" but if spacetime points are to be included among the mereological atoms, then it is better to use say "simples arranged such-and-suchwise". It is more general. We will prefer this other gloss from now on.

"The cup of coffee is next to the flowerpot"

"That tree is part of the backyard"

And say, respectively, that it is true iff there are simples arranged speck-of-dustwise on simples arranged shelfwise; iff there are simples arranged dogwise spread over simples arranged sofawise; iff there are simples arranged cup-of-coffeewise next to simples arranged flowerpotwise; and iff those simples arranged treewise among simples arranged backyardwise. Truth-conditions are magnetised, pulled, and fixed by the joint-carving referents of the expressions that appear in the sentences under consideration.

Earlier, we said that standard Lewisians should accept Strong Magnetism because it is Strong Magnetism that makes the most sense of the Magnetism doctrine. We also said that once standard Lewisians do this, they are under pressure to abandon mereological Universalism in favour of some sort of mereological nihilism. But one might reply that the fact that we should talk and think in joint-carving terms, in itself, does not rule composite objects out of existence. However strong the magnetic force from nature's joints could be, we are told, it is a pulling rather than erasing force. This is certainly correct, but the fate for Universalist Lewisians does not change. Indeed, the form of nihilism the standard Lewisian should embrace is a form of *Non-Eliminative Nihilism*, according to which our talk and thought ultimately rest on noncomposite objects, even if strictly speaking composite objects exist[40]. Accordingly, there are composite objects but we should say and think

---

[40]More often than not, Nihilism is Eliminativist because, more often than not, it rejects the existence of composite objects. But forms of Non-Eliminative Nihilism are perfectly possible. For example, Contessa (2014) rejects the existence of composite objects but

that, ultimately, there are none – ultimately, there are only noncomposite objects arranged such-and-suchwise[41].

The lesson, thus, is subtle. It is not that standard Lewisians are under pressure to disregard the truth of Universalism[42], but rather its ontological significance. Universalism, thus, would be treated as a nonfundamental truth that tells us nothing about how things *really* stand in the world (compositionally). And this is problematic for standard Lewisians – who, remember, are Unrestricted Composition lovers – because when they faced the Special Composition Question:

(SCQ): Under what (necessary and sufficient) conditions there is a y composed out of some xx?

And answered with:

denies that our singular referring expressions such as "the dog", "the glass", and "the flowerpot" refer to composite objects such as dogs, glasses, and flowerpots. In fact, they refer to simples arranged dogwise, glasswise, and flowerpotwise. So, strictly speaking, according to Contessa, nihilism rejects the existence of composite objects but does not deny that there are dogs, glasses, and flowerpots for when we talk and think of dogs, glasses, and flowerpots, we really talk and think simples arranged dogwise, glasswise, and flowerpotwise. Contessa's own Nihilism bears some similarity with the Non-Eliminative Nihilism we are discussing, in fact, in footnote 16, he even briefly touches on the main point of the present Chapter. Unger (1979a, 1979b, 1979c, 1980), on the other hand, rejects the existence of composite objects but for the very reason that our concepts of composite objects are defective and prone to inconsistencies. Thus, Unger accepts that when we talk and think about dogs, glasses, and flowerpots, we should be talking and thinking about composite objects, but the concepts we use to talk and think about these objects lead us nowhere. Beyond our inconsistent concepts, though, Unger agrees that there could be – perhaps, unknowable – genuinely composite objects. Finally, Sider (2011, 2013) denies that composite objects exist fundamentally, not that they exist; in fact, they do nonfundamentally. For more details see below. This list, of course, is not exhaustive but only illustrative.

[41]Interestingly, according to this form of Nihilism *cum* Strong Magnetism, even stipulative definitions would fail. Even stipulating that "dog" refers to dogs will not do for use would get trumped in favour of the most eligible meaning, i.e. simples arranged dogwise.

[42]Strictly speaking, there are cats, books, trogs, glasses of beer, cups of coffee, nosebooks, and so on.

(Universalism): There is a y composed out of some xx iff there are some xx.

Rather than with:

(Nihilism): There is a y composed out of some xx iff there is only one of the xx.

It is reasonable to suppose that they wanted to express a belief in a *fundamental* truth, that is a truth that tells us how things really are in the world (compositionally). But it is precisely the good-standing of this belief that gets trumped, systematically, by the magnetic pull from the joints in nature.

At this point, it might not have escaped the keen observer's notice that the fate of the standard Lewisian package and the Lewisian Book of the World that grows around it is that of collapsing onto the *Siderian Book of the World*[43]. Indeed, Sider (2011, 2013), adds to the standard Lewisian package the following key tenet:

(Fundamental Nihilism): *Fundamentally*, composite entities do not exist.

(Naturalness for Properties): For any property P, P is natural iff P carves nature at the joints, i.e. iff P makes for – at least – intrinsic qualitative similarity among things and determines the causal powers of things. (For instance, BEING A DOG, HAVING $\frac{1}{2}$ SPIN, or HAVING β-DECAY,

---

[43]It may be an imperfect collapse. I do not expect the Siderian or nonstandard Lewisian package discussed here to be perfectly accurate. There are important omissions – e.g. Sider's treatment of the existential quantifier and his notion of structure, both of which play an important role in the actual Siderian Book of the World. But I think the package is accurate enough to deserve the Siderian label. After all, the spirit and enough of the letter are there. For those, though, that could get offended by these exegetical inaccuracies, I suggest reading our discussion regarding not Sider and the Siderian Book of the World, but rather pseudo-Sider and the pseudo-Siderian Book of the World. Nothing hinges on this anyway.

are natural properties). Otherwise, P is unnatural, gerrymandered, miscellaneous. (For instance, such as BEING A TROUT-TURKEY, or "Goodman properties", e.g. BEING GRUE, are unnatural properties).

(Naturalness as Fundamentality): For any natural properties P and Q and world w, P is less natural than/more natural than/as natural as Q in w iff P is less fundamental/more fundamental/as fundamental as Q in w.

(Downward Mereological Fundamentality/Naturalness): If object y is a proper part of object x in w, then y is more fundamental than x in w/if object y is a proper part of object x, then y has a property P that is more natural than any other property had by x in w.

Sider establishes Fundamental Nihilism, first, by distinguishing between fundamental facts and nonfundamental facts. Facts are fundamental iff are cast in perfectly joint-carving terms, that is iff are cast in perfectly natural terms. (In this respect, Sider accepts that "fundamental reality contains nothing but [subatomic] physics, logic, and set theory" (2011, p. 292). Accordingly, the most fundamental facts pertain only to sets – pure or impure – and spacetime points). Then, Sider proposes a so-called *metaphysical semantics* that assigns fundamental truth-conditions to nonfundamental sentences and, thus, translates nonfundamental sentences into fundamental ones[44] (see especially Sider 2011, Ch. 7). The schema is: for a sentence σ of nonfundamental language L, σ is true in L iff ϕ, where ϕ is cast in perfectly joint-carving terms and

---

[44]There are several technical niceties I am omitting here for reasons of space and scope. But see Sider (2011, Ch. 7) for more details and Schaffer (2013) for a critical discussion.

provides the metaphysical truth-conditions for σ. An instance of the schema could be given as follows. Take a sentence of ordinary English, e.g.

"The dog is on the sofa"

And say that it is true in ordinary English iff for $x = \{p_1, ..., p_n\}$ and $y = \{s_1, ..., s_n\}$, $x \subseteq y$. That is, the set x of spacetime points $p_1, ..., p_n$ at which simples arranged dogwise are located is included in the set y of spacetime points $s_1, ..., s_n$ at which simples arranged sofawise are located[45].

The perfectly natural/fundamental/joint-carving level of the world fixes truth thereby making our nonfundamental talk and thought untrue. But as Sider (2011, pp. 113-114, 2013) suggests, our nonfundamental talk and thought could be "correct" in nonfundamental contexts, "correctness" is weaker than truth. Accordingly, we can say that "The dog is on the sofa" is correct in ordinary English iff the dog is on the sofa, even if, fundamentally speaking, there are no dogs and sofas. Standard Lewisians could follow suit by saying that even if we talk and think truly in terms of perfectly natural referents, we could talk and think correctly in terms of relatively natural referents. This may save face, but does not save the standard Lewisians from the fact that, against their hopes, composite objects talk and thought should be shallow talk and thought, whereas noncomposite talk and thought should be deep talk and thought.

---

[45]Note that this is a tentative rendition of mine of the final version of Sider's metaphysical semantics. Even if the idea is pretty intuitive, the details are complicated and not fully addressed by Sider himself. Indeed, while Sider presents a toy metaphysical semantics in Chapter 7 of *Writing the Book of the World*, which is much more reminiscent of Nihilistic paraphrase strategies in the vein of Dorr and Rosen (2002), van Inwagen (1990, Ch. 10) and Merricks (2001, Ch. 7), he later clarifies that the proper metaphysical semantics he has in mind should be cast only in terms of physics, logic, and set theory. But he admits he has no clear presentation to offer of this. For more details see Sider (2011, Ch. 13).

All in all, we have seen how alarmingly similar the consequences of the standard Lewisian package from which the Lewisian Book of the World sprouts up are to those of the nonstandard Lewisian package from which the Siderian Book of the World sprouts up. Especially, we could witness how alarmingly similar the consequences of the two meaning-fixing-mechanisms are for our talk and thought – Strong Magnetism for the Lewisians and metaphysical semantics for the Siderians – that the two books of the world advance. Of course, there are diverging details, but a change of letter here does not result in a change of spirit. The threat of collapse is not a cunning sleight of hand; it is real, so much so, that we should start to wonder whether the world the Lewisians should recognize as their own is Nihilistic (in our sense) rather than Universalistic. We are going to take stock of the situation more clearly and generally below.

3.3.5   The Trilemma

It is time to take stock and ask: "Where does collapse lead us to?", "What should the Standard Universalist Lewisians do?" As far as I am concerned, Lewisians should assess their options in terms of following trilemma:

(OPTION A): Renouncing Magnetism.

(OPTION B): Renouncing Universalism.

(OPTION C): Renouncing the standard Lewisian graded conception of naturalness.

In all likelihood, standard Lewisians will be reluctant to consider the course of

action that would ensue from each option. After all, Option A asks Lewisians to give up on one of the most distinctive, celebrated, and important theoretical roles for naturalness: resorting to the joints in nature so as to fix our talk and thought content. Some, e.g. Schwarz (2014) and Warren (2023), would be ready to reject Magnetism and live without it[46], but I doubt many Lewisians would be happy to follow suit[47].

Option B, on the other hand, asks Lewisians to give up their fondness for Unrestricted Composition, at least as a deep belief of theirs regarding the mereological structure of the world. Moreover, it is hard to envision the standard Lewisian doing without a certain *egalitarianism about composition*, that Universalism encourages, according to which all sorts of composite objects[48] there are – be them familiar or extravagant – are all ontologically on a par[49]. In other words, no composite object is special from an ontological point of view.

Of course, one could reply that the standard Lewisian package accepts that the world unfolds downwards in levels of increasing fundamentality, so after all, the standard Lewisian package must accept some form or another of *classificatory inegalitarianism.* Correct, but the sort of classificatory inegalitarianism Lewisians should advocate, as far as I am concerned, should

---

[46]I do not even think that Schwarz and Warren would be willing to be counted among the Lewisian cohort. Though, note that Warren (ibid.) expresses some sympathy for the notion of naturalness and the existence of objective joints in nature (Schwarz (ibid.) is less sympathetic). So, his criticisms are aimed precisely at Magnetism.

[47]Note, however, that I will significantly revise the Magnetism tenet and make it a somewhat weaker thesis. More details are below.

[48]Here, I am writing under the presupposition that every object is composed, either properly (by having proper parts) or improperly (by having only itself as part).

[49]I remind the reader that my Structured Universalism is not ontologically, but metaphysically inegalitarian. Indeed, I regard all composites alike from an existential point of view, but draw metaphysical distinctions about them.

be descriptive and perhaps explanatory, *not* ontological. That is, Lewisians should say that the world unfolds downwards in increasingly more basic *levels of description* or *levels of explanation*[50]. Accordingly, while it is true that some objects allow for more basic descriptions and, perhaps, explanations of the world than others, it does not mean that some objects – those that lie on the most basic level of description and/or explanation – exist in a more basic way than others. In short: what is more or less basic/natural/fundamental about some objects is their nature, not their being. Thus, in principle, nothing prevents the Lewisians from arguing coherently that – say – books and dogs are more basic/natural/fundamental than nosebooks and trogs, but that books, dogs, nosebooks, and trogs exist all in the same way. However, if the Lewisians have to give up Universalism for some Siderian form of Nihilism, they cannot but accept that some objects – i.e. quarks, leptons, and points of spacetime – exist more basically/naturally/fundamentally. A wet blanket for lovers of ontologically nondiscriminatory abundance.

Option C, finally, asks Lewisians to give up their degree-theoretic conception of naturalness. Lewisians are drawn to this view of naturalness, in part, because they accept the world has a hierarchical structure and, in part, because they accept that fundamentality and naturalness should be

---

[50]A level of description and explanation is provided by a given domain of inquiry. Thus, for example, the domain of psychology defines the level of psychological description and psychological explanation; the domain of zoology defines the level of zoological description and zoological explanation; the domain of biochemistry defines the level of biochemical description and biochemical explanation; the domain of quantum physics defines the level of quantum description and quantum explanation; and so on. Then it could be said the more micro it gets, the more basic a level of description and explanation it gets; the more macro it gets, instead, the less basic a level of description and explanation it gets. This is a possible way of presenting a very popular yet old-fashioned view, but we are not forced to accept it. In fact, I do not and later I will advance a different view.

theoretically identified. We have seen that, for the standard Lewisian, as the world unfolds downwards in more and more fundamental levels so it does in more and more natural levels. Hence, for the standard Lewisian, on pain of losing explanatory adequacy, naturalness *has to be* degreed. The more general point, here, is that for the standard Lewisian, giving up on the degree-theoretical conception of naturalness would mean giving up on a broader conception of the world.

Choosing between Option A, Option B, and Option C does seem like a choice of evils for the standard Lewisian. To a certain extent, this is true given that something has to go. However, I do not think the Lewisians should lose hope: in fact, collapse is avoidable and the good standing of the Lewisian Book of the World, under some adjustments, can be maintained. My proposal for the Lewisians is to keep Magnetism, even if with some important qualification, and Universalism about composition as nonnegotiable tenets, while rejecting the degree-theoretical conception of naturalness. Thus, the best hope for the Lewisian is pursuing Option C. But there is more. In what follows, we are going to present and critically assess a heterodox Lewisian package that upholds the Schafferian or scientific conception of naturalness and the theoretical separation of naturalness from fundamentality. Then, regarding the role that Magnetism plays for the new package, a notion of "Contextual Salience" will also be discussed. Eventually, the Lewisian Book of the World will be saved, even if with a new face.

3.4 The Solution

3.4.1 A New Package for a Nonstandard Lewisian Book of the World

The new Lewisian package I propose will offer to the Lewisians more than a mere loophole, but a way to reconceive their world for the better. Its core theses go as follows:

(Unrestricted Composition): For any objects xx, there is always a further object y composed out of the xx, no matter how spatiotemporally and causally unrelated are the xx.

(Schafferian Naturalness): For any property P (or object x), P (or x) qualifies as natural *simpliciter* iff P (or x) is scientific, i.e. iff P (or x) applies to all figures in scientific explanations of the world; otherwise, P (or x) qualifies as unnatural *simpliciter*[51].

(Fundamentality as Basicness): For any x, x is fundamental iff it is basic; x is nonfundamental iff it is derivative.

(Naturalness is Not Fundamentality): Naturalness does not track fundamentality and vice versa.

(Contextual Salience): For any properties P and Q (or objects x and y), P (or x) can be more or less salient than Q (or y) relative to a given context of inquiry.

---

[51]Unnatural properties are, in a sense, unscientific.

As we can see already, the package makes a few changes to the standard Lewisian package. Let us take a closer look to appreciate the resulting big picture[52].

Unrestricted Composition

We have discussed Unrestricted Composition at length throughout this Dissertation, so we will not go into a detailed discussion thereof all over again. We should already be quite familiar with it[53].

Schafferian Naturalness

Joint-carving facts, for our heterodox Lewisian, are facts of Schafferian naturalness according to which properties/objects that figure in scientific explanations of the world are natural, while all the other unscientific ones are unnatural. Accordingly, a list of Schafferian natural properties would include BEING A GLASS OF BEER, BEING A DOG, BEING A CANCER CELL, HAVING $\frac{1}{2}$ SPIN, HAVING CONSCIOUSNESS, BEING AN HOLOBIONT, HAVING RATIONAL EXPECTATIONS, and so on. On the other hand, a list of Schafferian unnatural

---

[52]I would like to point out that another option was open to consideration. That of a package accepting a nonstandard reading of Schafferian naturalness, according to which all scientific properties (or objects) carve at the joints but are graded. Under this model, we grade properties from "the point of view" of each scientific context. Accordingly, we fix a center, i.e. the perfectly natural, and a periphery, i.e. the less than perfectly natural, according to a given context. Then, depending on how distant from the center we are with respect to the laws and objects of that context, we get less and less natural properties. This is an interesting option, worth further exploration. However, the resulting picture we are going to discuss does not differ too much from this alternative. Of course, the elephant in the room is the conception of Schafferian naturalness. Thanks to Aaron Cotnoir here.

[53]We should not forget, though, that I do *not* accept Standard Universalism, but, in fact, a Nonstandard form of Universalism: namely, Structured Universalism. So, according to the current package, it is true that composition is unrestricted, but it is also true that there is a principled distinction between natural and unnatural wholes. For more details, the reader should see Chapter 1.

properties would include BEING GRUE, BEING A TROUT-TURKEY OR NOT TOO FAR AWAY FROM A TROG, BEING NOT TOO DISTANT FROM A GLASS OF BEER ON A BLUE MONDAY, and so on and so forth.

Moreover, according to the Schafferian conception, naturalness is *metaphysically egalitarian*, that is, all the natural properties equally carve nature at the joints, whereas all the unnnatural properties equally fail to carve nature at the joints. Accordingly, joint-carving facts are scientific and "horizontal", in the sense that all nature's joints rest on the same metaphysical level playing field; and the same goes, *mutatis mutandis*, also for all nature's "unjoints".

I think the Schafferian scientific conception is theoretically superior to the fundamentalist Lewisian one. Indeed, it liberates naturalness from the yoke of physicalism, while embracing *total science*, and it acknowledges that joint-carvingness is a matter of nomologic relevance. After all, if a property or an object is projectible in the sense that it allows us to explain the world scientifically, then it makes for similarity and grounds the causal powers in the world. After all, carving nature at its joints by resorting to properties/objects drawn from *all* levels of nature[54] is all but uncommon[55]. So, I think that

---

[54]Here, I am thinking especially about Dennett and his "stances" (see Dennett 1981). Indeed, Dennett argues convincingly that in order to provide "global" explanation, we need different explanations from different levels of description of the world. There are more and less basic levels but each explanation from each level brings with it something new on the table. For example, if you want to explain the nature of a person overall, describing it as a physical system will do only in part because physics will never give you the person's intentions, beliefs, reasons, choices, and so on. For that, you have to describe the person as an agent. If, instead, you want to explain why a person has certain traits, describing it as a physical system or as an agent will not do because you need to describe it as an evolutionary organism. And so on. Thus, explanatory power comes from all over the spectrum and not just from an overarching minimal base.

[55]Consider Hicks and Schaffer (2017) who argue that acceleration figure in a fundamental law of nature, i.e. Newton's Second Law $F = ma$, even though acceleration is less than

---

Schafferian naturalness is, at any rate, the correct conception of naturalness that Lewisians should be drawn to.

Fundamentality as Basicness

We said that for any x is fundamental iff it is basic; otherwise, x is nonfundamental iff it is derivative. The idea, here, is that fundamentality tracks an ontological dependence order according to which x is basic iff it does not exist in virtue of anything else, whereas x is derivative iff it exists in virtue of something else. Derivative entities can be derivative on other derivative entities, but all derivative entities are derivative, ultimately, on basic entities.

Thus, for us, basic entities are what Schaffer calls a "ground of being"[56] (2010a, p. 37), derivative entities are all the entities that hinge on such ground in order to exist. In other words, basic entities are *ontologically independent*, whereas derivative entities are *ontologically dependent*.

We can take the usual view of Parts Priority+Wellfoundedness+Atomism, and say that wholes depend for their existence on the parts they comprise. However, their mereologically simple parts do not, ultimately, depend on anything else. For instance, tables ontologically depend on molecules, which ontologically depend on physical atoms, which ontologically depend on quarks and leptons, which are ontologically independent[57].

---

perfectly natural. Indeed, Hicks and Schaffer talk of "derivative properties" in fundamental laws of nature.

[56]Though, I am not committing to grounding. As I take it, this is just a suggestive way of talking.

[57]Thus, in our view, a traditional role of naturalness, i.e. that of providing a minimal qualitative base is, instead, provided by fundamentality. The basic entities, i.e. the ontologically independent entities are those that provide the minimal base for the world. Cf. Schaffer (2003a, p. 509).

For us, this is enough of a presentation of fundamentality. True, I have been a bit short on detail, but for our present concerns, nothing hinges on further nitpicking details[58].

Naturalness is Not Fundamentality

We said that naturalness does *not* track fundamentality just like fundamentality does *not* track naturalness. Indeed, according to our new package, naturalness tracks joint-carvingness, whereas fundamentality tracks basicness. The former has to do with making for similarity and grounding the causal powers, whereas the latter has to do with ontological dependence.

If my contention is correct, then we can have objects that equally carve nature at the joints but that are more or less fundamental to one another. For instance, we can argue that organisms carve nature at the joints just as much as the cells they comprise, even though organisms are less fundamental than, or derivative on, the cells they comprise because they are ontologically dependent on them. Or we can argue that a molecule carves nature at the joints just as much as the quarks that compose it, even though the molecule is less fundamental than, or derivative on, the quarks because it is ontologically dependent on them. Quarks, in effect, are fundamental, or basic, because are ontologically independent.

Naturalness orders things "horizontally", whereas fundamentality orders things "vertically". The horizontal ordering of naturalness is the level playing field of nature, whereas the vertical ordering of fundamentality is the layered

---

[58]But for more nitpicking details, please see Barnes (2012), Cameron (2010), Koslicki (2012) Nolan (2011), Williams (2010), Tahko (2018).

structure of the world.

This strikes me as a perfectly reasonable view to hold. Conflating the two notions, as Lewis does, has had unpromising consequences. In hindsight, division of labour gives us a better pathway to understanding the structure of the world[59].

Contextual Salience

I argue that there are *two* dimensions of meaning-assignment: a metaphysical, context-independent one and another non-metaphysical, context-dependent. The first has to do with which referents, for a given expression, carve nature at the joints, while the second with which referents, for a given expression, are contextually salient, i.e. salient relative to a given context of inquiry[60]. As Taylor (2016) has convincingly argued, a distinction along these lines seems warranted by the way we negotiate the world and engage in our varied referential as well as communicative practices.

Now, take the expression "Bruce the cat". Given the Schafferian conception of naturalness, "Bruce the cat" has (at least) the following *equally* eligible referents: Bruce as a well-demarcated domestic cat; a Bruce-shaped organism; a Bruce-shaped holobiont; a bunch of particles arranged catwise.

These referents hinge "Bruce the cat" on the intrinsic structure of the world. They do so equally. But this does not mean that they are all equally salient. In fact, depending on the context of inquiry, one referent can be more or less salient than the other. That is, more or less adequate to fulfill

---

[59]A similar suggestion can be found in Weatherson (2006). But see also Bennett (2017), Funkhouser (2021), and List (2021) for helpful related considerations.

[60]More on this below.

213

our descriptive and/or explanatory purposes relative to a given context of inquiry.

More precisely, say that a context of inquiry is a pair consisting of a context of utterance and a level of description of the world[61], i.e. $c_i = <c_u, l_d>$. Then say, a salient referent or meaning-assignment, for a given expression, is the eligible referent for that expression that is more adequate to fulfil our descriptive and/or explanatory purposes in a given c_i.

For instance, in the context of our lifeworld, the salient referent for *Bruce the cat* is Bruce as a well-demarcated domestic cat; in the context of microphysics, instead, the salient referent for "Bruce the cat" is a bunch of particles arranged catwise; in the context of biology, it is the Bruce-shaped organism; in the context of immunology, it is the Bruce-shaped holobiont[62].

Salience is a *pragmatic*, *context-dependent*, and *gradable* parameter. It is pragmatic because it has to do with a contextually determined aim, i.e. choosing the most descriptively or explanatorily adequate meaning among the eligible meanings; it is context-dependent because it varies from context to context; and it is gradable at least in the sense that for a given context of inquiry, salient meanings of other contexts are less salient. For example, in the context of our lifeworld, the Bruce-shaped holobiont is less salient a meaning than Bruce as a well-demarcated domestic cat. The same goes,

---

[61]Remember, we have this at our disposal because of our take on fundamentality.

[62]Besides Taylor (2016), who advocates for "C-Naturalness" or "context-dependent naturalness", i.e. a non-metaphysical notion of naturalness for properties relative to a given activity, I think it should be mentioned the *Better Best System* of Cohen and Callender (2009, 2010), according to which there is no best system overall of the world built from the perfectly natural properties, but rather various best systems for each context of science and set of natural properties.

mutatis mutandis, for the other contexts[63].

All in all, note how, under the current proposal, we run no risk of Nihilistic collapse since the magnetic pull of nature's joints branches out and disperses throughout all the levels of nature, and we are well-placed to assign perfect scores to our intended meaning-assignments. That is, we can say that, in the context of our lifeworld, f("Bruce the cat", Bruce the cat) $= 1$, f("Milo the dog", Milo the dog) $= 1$;

f("That book", Stephen King's new book) $= 1$, and

f("That shelf", the shelf on which Stephen King's new book lies) $= 1$. In other context, we can change parameters of evaluation and assign perfect scores to other pairs.

Finally, we may venture into a twofold account of Magnetism, according to which a given expression can magnetized – metaphysically – by nature's joints and – pragmatically – by salience. Depending on whether we are interested in fixing joint-carving meanings or salient meanings of a word, we may resort to one of the following magnetic doctrines:

(Joint-Carving Magnetism): Given an expression e (of our talk or thought) and some candidate meanings $m_1, ..., m_n$ for e, the meaning of e is the meaning m_i of e that carves e at the joints.

(Salience Magnetism): Given an expression e (of our talk or thought), a context of inquiry c_i, and some candidate meanings $m_1, ..., m_n$ for e, the meaning of e is the most salient meaning m_i of e in c.

---

[63]Whether there can be also meanings that are "as salient as" is a question which I have no answer, now, but it is worth further exploration in future research.

This new account of Magnetism, as far as I am concerned, is not only interesting in its own right, but also a promising proposal that allows us to get more subtle about how reference and naturalness intertwine.

3.5   Conclusion

It is time to take stock. We have taken the Lewisian Book of the World – the Lewisian worldview – and put a package of its core theses under serious scrutiny. In particular, we have examined in detail whether Lewisians could claim a belief in Unrestricted Composition while holding the magnetic role for naturalness. We have found out that the standard Lewisian package, as we have called it, is internally incoherent and collapses onto some sort of Siderian Nihilism. After stating the issue in the form of a trilemma, we have offered a new Lewisian package that calls for a new conception of naturalness, the theoretical separation of naturalness and fundamentality, and a new understanding of Magnetism. Lewisian Universalists are offered a nonstandard Book of the World where Universalism expresses a fundamental truth; all levels of nature carve at the joints; the world has a hierarchical structure; and we can magnetize our talk and thought according to salience in a context of inquiry. I take this to be a promising new page for Lewisian metaphysics.

Conclusion and Further Developments

In this Thesis, I have tried to articulate a new picture of Lewisian metaphysics for the material world. Such a new picture rests on three main theoretical findings:

(1) A new theory of Universalism.

(2) A new defense of Permissivism in metaphysics.

(3) A new Lewisian Book of the World.

Regarding the first point, in Chapter 1, we have systematically developed the theory of Structured Universalism (SU), according to which there are all sorts of wholes, but some – in effect a minority – are structurally robust and nomologically relevant, whereas all the others are structurally nonrobust and nomologically otiose. The former are natural wholes, the latter unnatural wholes. Then, we have shown how SU supports an intriguing theory of natural objects. This has led us to consider the Natural Principles of Unity, i.e. measure functions that map objects to degrees of naturalness. Equipped

with our NPU, we have explored five models for the material world, each of which fosters a peculiar metaphysical conception of the world: the Fundamentalist SU model, the Gunky SU model, the Monist SU model, the Scientific SU model, and the Emergentist SU model. Our NPU have also allowed us to consider possible interplays between naturalness, parthood, and composition. Then, we have illustrated the benefits of SU and have found out that SU grants the Universalists with unique pros: (i) reconciling Universalism with total science and our total theory of the world; (ii) offering a novel Lewisian reading of the "mere sums" vs "genuine wholes" distinction of the Aristotelian-Husserlian tradition; (iii) advancing an interesting restricted composition with no vagueness nor restriction, which tells us that we ordinarily restrict composition around objects with a high degree of naturalness, but being naturalness a spectrum with no preferred single (non-maximal) degree, our restriction is vague; and (iv) a plausible explanation of the ontological disagreement between Universalists and ordinary folks. It should be noted that we have accomplished these results by *improving on* Standard Universalism thereby pushing it in new directions.

Regarding the second point, in Chapter 2, we have carefully assessed and defied two formidable challenges from Dan Korman and Kathrin Koslicki. In particular, Korman gave us the chance to reflect on the relatively unexplored topic of which interplay there should be between gerrymandered mereological fusions, causation, and perceptions. Accordingly, we have advanced an elegant Principle of Perceptual Magnetism to the effect that (some of) the natural wholes are perceptual magnets, that is, are eligible to serve as the content of our perceptual experiences and beliefs. The unnatural wholes,

218

on the other hand, are ineligible to serve as such contents. This effectively explains why trogs, trout-turkeys, and nosetowers systematically escape our notice, while dogs, trees, kazoos, coffee cups, flowers, houses, and whatnot, fill up our senses. I think this is an important achievement for Universalists, who are usually silent and dismissive about these issues. Then, Koslicki allowed us to reflect more carefully on the interplay between singular reference and the notion of well-demarcated objects. It has turned out that SU can counter all of the most pressing objections that Koslicki has against Lewisians. Interestingly, her criticism of naturalness for properties confirmed how beneficial it could be to have a distinctive and developed notion of naturalness for objects. Hence, in general, in Chapter 2, we could ascertain that some of the usual worries Conservatives raise against Permissivists could be defied or, at the very least, tamed by our SU. This, in turn, shows how relevant SU could be for the current debate on material objects metaphysics.

Regarding the third point, in Chapter 3, we have explored the standard Lewisian Book of the World and have shown that some of its chapters do not accord well. In fact, we have seen that, under the dust jacket, there could be written "Siderian Book of the World". Out of the metaphor, we have shown how certain key tenets of Lewisianism regarding naturalness, fundamentality, and magnetism lead us to some sort of Siderian Nihilism. I think this is an important result. Indeed, more often than not, Lewisians treat the doctrine of Magnetism as perfectly understood and unproblematic. But there are different versions of Magnetism out there depending on how we want to understand the magnetic pull from nature's joints. We have shown, first, that Lewisians should be committed to a strong form of Magnetism, and, then,

that this triggers the Nihilistic collapse. Because of this, we have developed a new, nonstandard Lewisian package that, in effect, re-evaluates several key tenets of the usual Lewisian Book of the World. Indeed, our package upholds Schafferian or scientific ungraded naturalness; divides naturalness from fundamentality to the effect that naturalness tracks joint-carving facts, whereas fundamentality tracks basic facts; and elaborates a new magnetism that allows for context-sensitive rankings based on a distinctive notion of "salience". So, all in all, in Chapter 3, we have kick-started a radical new way of looking at the world from a Lewisian point of view. Our nonstandard Lewisians believe in a world where naturalness is drawn from all levels of nature, the world is ordered into a hierarchy of levels of description, composition is unrestricted, and we can order the egalitarian joints of nature based on their salience for our descriptive and explanatory practices.

Where Do We Go From Here?

All things considered, this Thesis makes significant steps forward in the direction of a nonstandard take on Lewisian metaphysics of the material world. In doing so, we have sketched the way to, but there is still much that can be done. Among the pathways that could be undertaken in future research, the most interesting ones could include the following ones:

(1) The development of a full-fledged measurement theory of natural objects.

(2) The development of a full-fledged theory of perceptual content based on natural objects.

(3) The further development of the nonstandard Lewisian Book of the World.

(4) The application of the theory of natural objects to the sciences, especially biology and quantum physics.

(5) The exploration of a contingentist framework according to which (i) natural objects could have been unnatural and vice versa, and (ii) Structure Universalism is true in the actual world but false in others.

(6) The exploration of a theory of natural objects in time, which could explain some facts about change in terms of losing or acquiring naturalness through time.

Points (1)-(3) would *continue* the research project of this Thesis. Indeed, as I said in Chapter 1, my theory of natural objects is a *proto*-theory of measurement. There are more technical details to sort out to develop a proper measurement theory of natural objects, but I think it would be a fruitful endeavor. Especially, it would be interesting to afford more technicalities to make the SU models better and stronger. The same holds, *mutatis mutandis*, for my theory of perceptually eligible wholes. In Chapter 2, I have developed enough theory to defy the objections from Korman, but I have not offered a proper theory of perceptual content and experience based on my Principle of Perceptual Magnetism. This too would be interesting to pursue. As per the third point, I think it would be intriguing to see how far the re-evaluation of Lewisianism could go. In this respect, I would like to explore more of the connection between the tenets of the new package, especially Schafferian

221

naturalness, Fundamentality as Basicness, and Salience Magnetism.

Points (4)-(6) would, instead, *expand* the project pursued in this Thesis. The fourth point could be interesting to pursue, especially, considering that biology and quantum physics pose great challenges to the notions of individuality and unity (cf. Calosi and Fano 2011, French 2014 Meincke and Dupré 2020, Maudlin 1998). Thus, it would be nice to see whether the theory of natural objects can contribute to these challenging fields. The fifth point would develop a contingentist framework for natural objects. Regarding naturalness, I think the idea is plausible, especially considering that naturalness is tied up with the laws of nature, which are commonly taken to vary from world to world. Thus, it would be intriguing to develop a contingentist view of natural objects to the effect that they could change their naturalness from world to world. Regarding composition, I would like to develop a view in the vein of Dershowitz (2022) to the effect that each world best explains the contingent local facts according to varying standards. The sixth point, finally, would explore the idea that natural objects can change through time also because of their naturalness degree and, thus, that, as they acquire or lose degrees of naturalness, they change.

All in all, I think the prospects for SU and the systematic development of full-fledged theories of natural objects are fascinating and promising. I would like to thank the reader for the patience and for having lasted until now.

Appendix A

Mereological Constructivism/Idealism and Structured Universalism

To counter Permissivism, some Conservatives opt for *anti-realist* strategies to the effect that there are, to use Korman's jargon (2014, 2015), *doxastic explanations* of the world. That is, there are explanations of the object facts in terms of facts about our object beliefs. Accordingly, the fact that there are cats, coffee cups, or trees, in the world, ultimately, has to do with the fact that we have cat-beliefs, coffee-cup-beliefs, and tree-beliefs.

It is fair to say that anti-realist strategies in this vein are not very popular. I myself am not any anti-realist about the object facts, but this will not concern us here. I am interested in exploring, or rather sketching, the viability of an anti-realist form of Permissivism – in particular, an anti-realist version of Structured Universalism – that can effectively counter anti-realist

forms of Conservatism. We do this in a theory-building spirit.

In what follows, I will consider two intriguing versions of anti-realist Conservatism: *Nietzschean Constructivism* (Remhof 2017, 2018) and *Mereological Idealism* (Pearce 2017).

Recently, Remhof has argued against Permissivism, but in favour of Conservatism, by advancing an intriguing *Nietzschean* form of anti-realism, according to which our interests construct ordinary objects and, thus, also brought into existence by our interests (2017, 2018). We can write down the view as follows:

(Nietzschean Constructivism): Ordinary objects are socially constructed and brought into existence by human practices.

Remhof believes that ordinary objects such as cats, coffee cups, trees, stones, and whatnot are *mind-dependent* entities. In particular, they are social constructions brought into existence by our practices, interests, needs, and even values.

We should be careful not to conflate Remhof's constructivism into a form of Eliminativism. Indeed, for Remhof, ordinary objects are the result of an inter-subjective (*viz.* social) conceptual unification we humans operate on "bundles of forces". This should follow Nietzsche who, in his more speculative writings, appears to uphold a metaphysical picture of the world according to which, fundamentally, the world is but a chaotic mosaic of "quanta of forces", which function as "dynamic centers of power" (cf. Remhof 2018, Richardson 1996, Ch. 1)[1].

---

[1] Remhof seems inclined to believe that such centers of power are themselves constructed by us, but he does not endorse the view.

Thus, without *us* there are no cats, coffee cups, trees, stones, and what-not. These objects – in fact, every ordinary object – are objects of some human subject's possible experience.

A very similar view, *Mereological Idealism*, has been proposed and defended by Pearce (2017, p. 204):

> Mereological idealism does not involve belief in magical powers. Just as our conventions, intentions, and ways of thinking can create money and endow it with economic powers, or create statues and endow them with aesthetic powers, so our ways of thinking create composite objects more generally.

As I previously said, both Remhof and Pearce take their views to support Conservatism and discredit Permissivism. Consider Remhof (2018, p. 145):

> [C]onstructivists should be neither [P]ermissivists nor [E]liminativists: the concept < treebird > does not satisfy our needs, interests, and values in organizing in world of experience, whereas the concepts < tree > and < bird > certainly do.

And Pearce (*ibid.*, p. 205):

> The mereological idealist can maintain that ordinary objects are in the ordinary sense real while the universalist's exotica are imaginary. Undeniably, the concepts whereby ordinary objects are unified are concepts we in fact use to navigate the world, they are useful for predicting experience and guiding action, and they are not peculiar to one individual.

Remhof and Pearce's position is clear. However, I think they rely on a too narrow understanding of notions such as "interest", "activity", "ways of thinking". Indeed, our navigating the world – or, if you want, our having interest in it, or thinking about it – is by no means restricted to the deployment of *ordinary concepts* of ordinary objects such as TREE or BIRD. In fact, in theorizing about the world, we often resort also to *extra*ordinary concepts, e.g. QUANTUM FLAVOUR, SPIN, β-DECAY, HOLOBIONT, 4D MINKOWSKI SPACETIME, HADRON, MICROTUBULES, QUANTUM TELEPORTATION, ... – as a matter of fact, most of the concepts that populate the scientific image of the world.

So, perhaps, when we consider arguments from ontological parity (cf. Hawthorne 2006, Fairchild and Hawthorne 2018, pp. 60ff) or arguments *à la* Lewis-Sider argument from vagueness, we may think that, after all, it would be *useful* for us to posit extraordinary objects.

Moreover, note, the objects of Mereological Idealists and/or Constructivists are *not* metaphysically, but *conceptually unified.* Conceptual unification is cheaper. We think about what we need and create it – just as we created money and its financial power out of need. For instance, I think of an undetached part of a trout, and I think of an undetached part of a turkey, and I think of conjoining them in a trout-turkey. And here it is; I have "created"/"constructed" a trout-turkey.

I think Mereological Idealists and/or Constructivists should also be more open to these extraordinary objects. After all, they are not real in any thick sense of the word. They exist as long as we need them. So, once they are of no use to us anymore, we can do without them.

Of course, even if we want a plethora of conceptual constructions, we do not thereby have to say that these constructions are all structurally on a par. We may want to say that certain constructions are useful insofar as they organize their contents in a non-gerrymandered, non-scattered way, and provide us with means to predict ordinary experiences and causal connections. Other constructions, instead, while useful to avoid violations of ontological parity, among other things, are of no good use to our ordinary experience, and organize their contents in a gerrymandered and scattered way. In short, we could say that some constructions are *natural*, while that some other are *unnatural*.

Given this, we could attempt the formulation of an anti-realist form of Structured Universalism:

> (Anti-Realist SU): If we have a creative intention according to which there is a whole with such-and-such features, then there is a whole with such-and-such features constructed out of that creative intention. Some creative intentions, though, allow for natural constructions; all the others, allow for unnatural constructions.

Accordingly, under Anti-Realist SU, we have ontological constructions of all sorts but are careful enough to distinguish them based on what they do *for us*. We need dog- and tree-constructions, for example, to accomplish certain tasks, while we need trog-constructions to accomplish certain other tasks. They are different and carve the constructed world in different ways: natural constructions carve the constructed world at its conceptual joints, whereas unnatural constructions do not.

I think this allows for a more sensible and more powerful anti-realist framework to work with. Of course, I have merely sketched the view. Whether this turns out to be a promising route for mereological constructivism/idealism and whether mereological constructivism/idealism can deliver its promises of credible alternative is for future work to tell.

Appendix B

Gunk and Magnetism

In Chapter 3, we have been concerned with what we have called the standard Lewisian package. Such a package considers those views that standard Lewisians are more likely to accept. But in this Appendix we will briefly assess the case from *atomless gunk* and its interplay with Magnetism. Let us define atomless gunk as follows:

(Gunk): Everything has a proper part[1].

Gunky worlds, thus, allow for infinite descending chains of proper parthood. These worlds never bottom out and, for obvious reasons, fail to contain any mereological atom.

Our world does not seem to be gunky because, for all we know, microphysics gives us good examples of mereological atoms: quarks, leptons, and, perhaps, points of spacetime. Lewis agrees with this, but accepts the *pos-*

---

[1]In effect, we could have also resorted to our previous terminology of Parts Priority+Nonwellfoundedness. But I opted for a more straightforward definition since, here, we are not interested in subtle terminological distinctions.

sibility of gunky worlds. So, according to Lewis, somewhere in the logical space, there are gunky worlds (Lewis 1991).

Here, I am not interested in discussing certain issues regarding the compatibility of gunk and other Lewisian tenets, e.g. modal recombination (cf. Borghini and Lando 2011), but rather in investigating certain other issues regarding the interplay between gunky worlds and Magnetism. As far as I am concerned, this is not only a fascinating topic in its own right, but also an instructive case.

We begin with some assumptions. I agree with Lewis that, in the vastness of the logical space, there are gunky worlds. In particular, I assume that some of these worlds are what I am going to call *gunky Lewisian worlds.* In such worlds, the following holds: quarks and leptons are composed of smaller particles, which are composed of smaller particles, which are composed of smaller particles, ..., *ad infinitum*[2]; the inhabitants of these worlds talk and think exactly as (or almost exactly as) we do in our world and, in particular, have their meanings fixed by naturalness; finally, Strong Magnetism is true. All in all, I think the sort of worlds we are envisioning are plausible enough to proceed.

So, in these worlds, meaning-assignments and truth-conditions are given in terms of *perfectly natural* referents. Such referents, in our world, would be[3] mereological atoms such as quarks and leptons, but in *those* world, would be what? In gunky worlds, there simply is no such a thing as *the* perfectly

---

[2] We suppose that, in those worlds, as it might turn out for ours, points of spacetime are an idealized fiction of mathematical physics. Hence, the are no partless objects whatsoever.

[3] I say "would" and not "should" because I do not accept the Lewisian model of naturalness.

natural for there are infinite descending chains of naturalness.

Thus, in gunky Lewisian worlds, we have that reference and truth are "infinitely deferred, never achieved" (Schaffer 2010a, p. 62). Especially, we have that, for each eligible referent, there is always a *more* eligible referent. Thus, the magnetic pull from nature's joints ever increases, but never achieves thereby making the assignment of referents for talk and thought as well as truth-conditions for sentences an *impossible task.*

Now, imagine a world very similar to a gunky Lewisian world, but which is such that, there, naturalness is Schafferian, fundamentality does not track naturalness (and vice versa), and the correct theory of Magnetism is up for grabs. This is a *gunky Schafferian world* of our sort. In this world, we have infinite descending chains of scientific, egalitarian naturalness. The magnetic pull from nature's joints branches out throughout all the *infinite* levels of nature. So, infinite deferral of meaning and truth is blocked.

However, in this world, each expression is going to have *infinite equally eligible* referents. This might look scary, at first, but not after resorting to our Salience Magnetism. Accordingly, the inhabitants of the worlds we have called gunky Schafferian worlds can single out, among all the eligible referents, the most *salient* ones according to a given context of inquiry – as we illustrated at the end of Chapter 3. If we avail ourselves of Salience Magnetism, we can easily defuse the issue of having infinite equally eligible referents since not all these referents will count equally as the most salient ones in a given context of inquiry. So, inhabitants of gunky Schafferian worlds should be able to magnetize their language and thought with no qualms.

I think this is a further interesting advantage of the view I have pro-

posed. It can fix scenarios where meaning-assignments could otherwise be impossible. Moreover, we do not really know whether *our* world is not gunky. Imagining that it could be, our nonstandard Lewisian package of theses would provide an effective treatment of naturalness, fundamentality, and meaning-assignment also in gunky scenarios. Thus, our nonstandard Lewisian package could sustain a credible Lewisian metaphysics even if our world or others would turn out to be gunky.

References

Abelard, P. (1956). *Dialectica* (L. M. de Rijk & B. Nationale, Eds.). Assen,: Van Gorcum.

Akiba, K. (2000). Vagueness as a Modality. *Philosophical Quarterly*, *50*(200), 359–370. doi: 10.1111/1467-9213.00191

Akiba, K. (2004). Vagueness in the World. *Noûs*, *38*(3), 407–429. doi: 10.1111/j.0029-4624.2004.00476.x

Alston, W. P. (1996). *A Realist Conception of Truth*. Ithaca, N.Y.: Cornell University Press.

Arlig, A. (2007). Abelard's Assault on Everyday Objects. *American Catholic Philosophical Quarterly*, *81*(2), 209–227. doi: 10.5840/acpq200781238

Arlig, A. (2011). Mereology. In H. Lagerlund (Ed.), *Encyclopedia of Medieval Philosophy* (pp. 763–771). Springer.

Arlig, A. (2012). Parts, Wholes and Identity. In J. Marenbon (Ed.), *The Oxford Handbook to Medieval Philosophy* (pp. 445–67). Oxford University Press.

Armstrong, D. M. (1978). *A Theory of Universals. Universals and Scientific Realism Volume 2.* Cambridge University Press.

Armstrong, D. M. (1992). Properties. In K. Mulligan (Ed.), *Language, truth and ontology* (pp. 14–27). Kluwer Academic Publishers.

Armstrong, D. M. (1997). *A World of States of Affairs.* New York: Cambridge University Press.

Bach, K. (1987). *Thought and Reference.* New York: Clarendon Press.

Balashov, Y. (2005). On Vagueness, 4D and Diachronic Universalism. *Australasian Journal of Philosophy*, *83*(4), 523–531. doi: 10.1080/00048400500338740

Barnes, E. (2010). Ontic Vagueness: A Guide for the Perplexed. *Noûs*, *44*(4), 601–627. doi: 10.1111/j.1468-0068.2010.00762.x

Barnes, E. (2012). Emergence and Fundamentality. *Mind*, *121*(484), 873–901. doi: 10.1093/mind/fzt001

Barnes, J., et al. (1984). *The complete works: The revised oxford translation.* Princeton University Press Princeton.

Bennett, K. (2017). *Making Things Up.* New York, NY: Oxford University Press.

Bigelow, J. (1996). God and the New Math. *Philosophical Studies*, *84*(2-3), 127–154. doi: 10.1007/bf00354484

Bochenski, I. M., Church, A., & Goodman, N. (1956). A World of Individuals. In *The Problem of Universals: a symposium.* Notre Dame, IN: University of Notre Dame Press, pp. 13-31.

Bohn, E. D. (2009). Must There Be a Top Level? *Philosophical Quarterly*, *59*(235), 193–201. doi: 10.1111/j.1467-9213.2008.573.x

Borghini, A., & Lando, G. (2011). Natural Properties, Supervenience, and Mereology. *Humana Mente*, *4*(19), 79–104.

Bricker, P. (2020). *Modal Matters: Essays in Metaphysics.* Oxford University Press.

Brown, J. D. K. (2016). Natural Objects. *Journal of the American Philosophical Association*, *2*(2), 254–271. doi: 10.1017/apa.2016.6

Busse, R. (2016). Class Nominalism, Wolterstorff's Objection, and Combinatorial Worlds. *Philosophical Quarterly*, *66*(265), 680–700. doi: 10.1093/pq/pqw016

Calosi, C. (2011). Mereologia.. Retrieved from http://www.aphex.it/index.php?Temi=557D03012202740321030276773

Calosi, C. (2014). Quantum Mechanics and Priority Monism. *Synthese*, *191*(5), 915–928. doi: 10.1007/s11229-013-0300-6

Calosi, C. (2018). Quantum Monism: An Assessment. *Philosophical Studies*, *175*(12), 3217–3236. doi: 10.1007/s11098-017-1002-6

Cameron, R. P. (2010). Quantification, naturalness, and ontology. In *New waves in metaphysics* (pp. 8–26). Springer.

Carmichael, C. (2015). Toward a Commonsense Answer to the Special Composition Question. *Australasian Journal of Philosophy*, *93*(3), 475–490. doi: 10.1080/00048402.2014.989397

Casari, E. (2000). On Husserl's Theory of Wholes and Parts. *History and Philosophy of Logic*, *21*(1), 1–43. doi: 10.1080/01445340050044628

Chalmers, D. J. (2006). Strong and Weak Emergence. In P. Davies & P. Clayton (Eds.), *The re-emergence of emergence: The emergentist hypothesis from science to religion.* Oxford University Press.

Chalmlers, D. J. (2012). *Twentieth Excursus: Reference Magnets and the Grounds of Intentionality.* https://www.consc.net/books/ctw/extended.html.

Cohen, J., & Callender, C. (2009). A Better Best System Account of Lawhood. *Philosophical Studies*, *145*(1), 1–34. doi: 10.1007/s11098-009-9389-3

Cohen, J., & Callender, C. (2010). Special Sciences, Conspiracy and the Better Best System Account of Lawhood. *Erkenntnis*, *73*(3), 427–447. doi: 10.1007/s10670-010-9241-3

Contessa, G. (2014). One's a Crowd: Mereological Nihilism Without Ordinary-Object Eliminativism. *Analytic Philosophy*, *55*(2), 199–221. doi: 10.1111/phib.12037

Correia, F. (2004). Husserl on Foundation. *Dialectica*, *58*(3), 349–367. doi: 10.1111/dltc.2004.58.issue-3

Cotnoir, A. J. (2010). Anti-Symmetry and Non-Extensional Mereology. *Philosophical Quarterly*, *60*(239), 396–405. doi: 10.1111/phiq.2010.60 .issue-239

Cotnoir, A. J. (2013). Beyond Atomism. *Thought: A Journal of Philosophy*, *2*(1), 67–72. doi: 10.1002/tht3.64

Cotnoir, A. J. (2016). How Many Angels Can Be in the Same Place at the Same Time? A Defence of Mereological Universalism. *Mind*, *125*(500), 959–965.

Cotnoir, A. J., & Baxter, D. L. M. (Eds.). (2014). *Composition as Identity*. Oxford: Oxford University Press USA.

Cotnoir, A. J., & Varzi, A. C. (2019). Natural Axioms for Classical Mereology. *Review of Symbolic Logic*, *12*(1), 201–208. doi: 10.1017/ s1755020318000412

Cotnoir, A. J., & Varzi, A. C. (2021). *Mereology*. Oxford: Oxford University Press.

Dennett, D. C. (1981). *The Intentional Stance*. MIT Press.

Dershowitz, N. (2022). Nihilism, but Not Necessarily. *Erkenntnis*, *87*(5), 2441–2456. doi: 10.1007/s10670-020-00311-7

de Sa, D. L. (2006). Is "Everything" Precise? *Dialectica*, *60*(4), 397–409. doi: 10.1111/j.1746-8361.2006.01077.x

Dickie, I. (2015). *Fixing Reference*. Oxford, GB: Oxford University Press.

di Francia, G. T. (1998). A World of Individual Objects. In E. Castellani (Ed.), *Interpreting Bodies.* Princeton University Press.

Dorr, C., & Hawthorne, J. (2013). Naturalness. In K. Bennett & D. W. Zimmerman (Eds.), *Oxford studies in metaphysics, volume 8* (p. 1). Oxford University Press.

Dorr, C., & Rosen, G. (2002). Composition as a Fiction. In R. Gale (Ed.), *The blackwell companion to metaphysics* (pp. 151–174). Blackwell.

Eberle, R. A. (1970). *Nominalistic systems.* Dordrecht,: Reidel.

Elder, C. (2004). *Real Natures and Familiar Objects.* Cambridge, Mass.: Bradford.

Elder, C. (2008). Against Universal Mereological Composition. *Dialectica*, *62*(4), 433–454. doi: 10.1111/dltc.2008.62.issue-4

Emery, N. (2023). *Naturalism Beyond the Limits of Science: How Scientific Methodology Can and Should Shape Philosophical Theorizing.* New York, US: Oxford University Press.

Esfeld, M. (1999). Physicalism and Ontological Holism. *Metaphilosophy*, *30*(4), 319–337. doi: 10.1111/1467-9973.00141

Evans, G. (1975). Identity and Predication. *Journal of Philosophy*, *72*(13), 343–363. doi: 10.2307/2025212

Fairchild, M., & Hawthorne, J. (2018). Against Conservatism in Metaphysics. *Royal Institute of Philosophy Supplement*, *82*, 45–75. doi: 10.1017/s1358246118000103

Fine, K. (1982, 01). Acts, Events and Things. *Language and Ontology*, 97-105.

Fine, K. (1994a). Compounds and Aggregates. *Noûs*, *28*(2), 137–158. doi: 10.2307/2216046

Fine, K. (1994b). A Puzzle Concerning Matter and Form. In T. Scaltsas, D. Charles, & M. L. Gill (Eds.), *Unity, Identity, and Explanation in Aristotle's Metaphysics* (pp. 13–40). Oxford University Press.

Fine, K. (1999). Things and Their Parts. *Midwest Studies in Philosophy*, *23*(1), 61–74. doi: 10.1111/1475-4975.00004

Fine, K. (2010). Towards a Theory of Part. *Journal of Philosophy*, *107*(11), 559–589. doi: 10.5840/jphil20101071139

French, S. (2014). *The Structure of the World: Metaphysics and Representation*. New York: Oxford University Press.

Funkhouser, E. (2021). The Natural, the Fundamental, and the Perfectly Similar: Unraveling a Metaphysical Braid. *Metaphilosophy*, *53*(1), 85–99. doi: 10.1111/meta.12532

Geach, P. (2013). *Replies* 1991. in Peter Geach: *Philosophical Encounters*. In H. Lewis (Ed.), (Vol. 213). Springer Science & Business Media.

Giberman, D. (2020). What It Takes to Be Hunky. *Thought: A Journal of Philosophy*, *9*(1), 51–57. doi: 10.1002/tht3.442

Goodman, N. (1951). *The Structure of Appearance*. Cambridge, MA, USA: Harvard University Press.

Goodman, N. (1954). *Fact, Fiction, and Forecast*. University of London.

Goodman, N. (1958). On relations that generate. *Philosophical Studies*, *9*(5-6), 65–66. doi: 10.1007/bf00725420

Goodman, N. (1978). *Ways of Worldmaking*. Hassocks [Eng.]: Harvester Press.

Guigon, G. (2015). Coextension and Identity. In G. Guigon & G. R. Pereyra (Eds.), *Nominalism about properties: New essays* (pp. 135–155). Routledge.

Hawley, K. (2004). Borderline Simple or Extremely Simple. *The Monist*, *87*(3), 385–404. doi: 10.5840/monist200487319

Hawley, K. (2006a). Principles of Composition and Criteria of Identity. *Australasian Journal of Philosophy*, *84*(4), 481–493. doi: 10.1080/00048400601078955

Hawley, K. (2006b). Weak Discernibility. *Analysis*, *66*(4), 300–303. doi: 10.1093/analys/66.4.300

Hawley, K. (2014). Ontological Innocence. In A. J. Cotnoir & D. L. M. Baxter (Eds.), *Composition as Identity* (pp. 70–89). Oxford University Press.

Hawley, K. (2018). Almost Identical, Almost Innocent. *Royal Institute of Philosophy Supplement*, *82*, 249–263. doi: 10.1017/S1358246118000097

Hawthorne, J. (2006). *Metaphysical Essays*. Oxford University Press.

Hegel, G. W. F. (1975). *Hegel's Logic: Being Part One of the Encyclopae-dia of the Philosophical Sciences 1817.* trans. William Wallace, Oxford: Clarendon Press.

Heller, M. (1990). *The Ontology of Physical Objects: Four-Dimensional Hunks of Matter.* New York: Cambridge University Press.

Henry, D. P. (1991). *Medieval Mereology.* Philadelphia: B.R. Gru?ner.

Hestevold, H. S. (1981). Conjoining. *Philosophy and Phenomenological Research*, *41*(3), 371–385. doi: 10.2307/2107458

Hicks, M. T., & Schaffer, J. (2017). Derivative Properties in Fundamental Laws. *British Journal for the Philosophy of Science*, *68*(2). doi: 10.1093/bjps/axv039

Hintikka, J. (1998). What is Abduction? The Fundamental Problem of Contemporary Epistemology. *Transactions of the Charles S. Peirce Society*, *34*(3), 503 -.

Hirsch, E. (2005). Physical-Object Ontology, Verbal Disputes, and Common Sense. *Philosophy and Phenomenological Research*, *70*(1), 67–97. doi: 10.1111/j.1933-1592.2005.tb00506.x

Hodes, H. T. (1984). Logicism and the Ontological Commitments of Arithmetic. *Journal of Philosophy*, *81*(3), 123–149. doi: 10.2307/2026440

Hofweber, T. (2016). *Ontology and the Ambitions of Metaphysics.* Oxford, England: Oxford University Press UK.

Hofweber, T. (2019). Empirical evidence and the metaphysics of ordinary objects. In J. Cumpa & B. Brewer (Eds.), *The nature of ordinary objects* (p. 27–47). Cambridge University Press.

Horgan, T. (1993). On What There Isn't. *Philosophy and Phenomenological Research*, *53*(3), 693–700.

Hosseini, D., & Abasnezhad, A. (2014). Vagueness in the World; a Supervaluationist Approach. In K. Akiba & A. Abasnezhad (Eds.), *Vague Objects and Vague Identity: New Essays on Ontic Vagueness* (pp. 239–256). Springer.

Hovda, P. (2009). What is Classical Mereology? *Journal of Philosophical Logic*, *38*(1), 55–82. doi: 10.1007/s10992-008-9092-4

Hudson, H. (2000). Universalism, Four Dimensionalism, and Vagueness. *Philosophy and Phenomenological Research*, *60*(3), 547–560. doi: 10.2307/2653813

Hudson, H. (2001). *A Materialist Metaphysics of the Human Person*. Ithaca, N.Y.: Cornell University Press.

Hudson, H. (2002). Moving Faster Than Light. *Analysis*, *62*(3), 203–205. doi: 10.1111/1467-8284.00356

Hudson, H. (2006). Confining Composition. *Journal of Philosophy*, *103*(12), 631–651. doi: 10.5840/jphil2006103124

Huemer, M. (Ed.). (2001). *Skepticism and the Veil of Perception*. Lanham: Rowman & Littlefield.

Husserl, E. (1900-1901). *Logische Untersuchungen.* Niemeyer, Halle. 2nd edition: 1913 (volumes 1 and 2/i) and 1921 (volume 2/ii); Eng. trans. by J. N. Findlay: *Logical Investigations*, Routledge Kegan Paul, London, 1970.

İrem Kurtsal Steen. (2014). Almost-Ontology: Why Epistemicism Cannot Help Us Avoid Unrestricted Composition or Diachronic Plenitude. *Pacific Philosophical Quarterly*, *95*(1), 130–139. doi: 10.1111/papq.12020

Ismael, J., & Schaffer, J. (2020). Quantum Holism: Nonseparability as Common Ground. *Synthese*, *197*(10), 4131–4160. doi: 10.1007/s11229 -016-1201-2

Jaworski, W. (2016). *Structure and the Metaphysics of Mind: How Hylomorphism Solves the Mind-Body Problem.* Oxford: Oxford University Press UK.

Jeffrey, R. C. (1983). *The Logic of Decision.* New York, NY, USA: University of Chicago Press.

Johansson, I. (2006). Identity Puzzles and Supervenient Identities. *Metaphysica*, *7*(1), 7–33.

Johansson, I. (2008). Formalizing Common Sense: An Operator-Based Approach to the Tibbles-Tib Problem. *Synthese*, *163*(2), 217–225. doi: 10.1007/s11229-007-9199-0

Johnston, M. (1992). Constitution is Not Identity. In M. C. Rea (Ed.), *Material Constitution* (pp. 44–62). Rowman & Littlefield.

Johnston, M. (2002). Parts and Principles. *Philosophical Topics*, *30*(1), 129–166. doi: 10.5840/philtopics20023017

Johnston, M. (2006). Hylomorphism. *Journal of Philosophy*, *103*(12), 652–698. doi: 10.5840/jphil2006103125

Keas, M. N. (2017). Systematizing the Theoretical Virtues. *Synthese*, *1*(6), 1–33. doi: 10.1007/s11229-017-1355-6

Kerry, M., & Muller, F. A. (2017). Bound States and the Special Composition Question. In M. Massimi, J. Romeijn, & G. Schurz (Eds.), *Epsa15 Selected Papers: The 5th conference of the European Philosophy of Science Association in Düsseldorf.* Springer.

Kim, J. (2010). *Essays in the Metaphysics of Mind.* Oxford, GB: Oxford University Press.

Koons, R. (2014). Staunch vs. Faint-Hearted Hylomorphism: Toward an Aristotelian Account of Composition. *Res Philosophica*, *91*(2), 151–177. doi: 10.11612/resphil.2014.91.2.1

Korman, D. Z. (2008). Unrestricted Composition and Restricted Quantification. *Philosophical Studies*, *140*(3), 319–334. doi: 10.1007/s11098-007-9147-3

Korman, D. Z. (2009). Eliminativism and the Challenge From Folk Belief. *Noûs*, *43*(2), 242–264. doi: 10.1111/j.1468-0068.2009.00705.x

Korman, D. Z. (2010a). The Argument From Vagueness. *Philosophy Compass*, *5*(10), 891–901. doi: 10.1111/j.1747-9991.2010.00327.x

Korman, D. Z. (2010b). Strange Kinds, Familiar Kinds, and the Charge of Arbitrariness. *Oxford Studies in Metaphysics*, 119–144.

Korman, D. Z. (2014). Debunking Perceptual Beliefs About Ordinary Objects. *Philosophers' Imprint*, *14*.

Korman, D. Z. (2015). *Objects: Nothing Out of the Ordinary.* Oxford University Press UK.

Korman, D. Z., & Carmichael, C. (2016). Composition. In *Oxford handbooks online*.

Koslicki, K. (2003). The Crooked Path From Vagueness to Four-Dimensionalism. *Philosophical Studies*, *114*(1-2), 107–134. doi: 10.1023/a:1024413302197

Koslicki, K. (2007). Towards a Neo-Aristotelian Mereology. *Dialectica*, *61*(1), 127–159. doi: 10.1111/dltc.2007.61.issue-1

Koslicki, K. (2008). *The Structure of Objects.* Oxford University Press.

Koslicki, K. (2012). Varieties of Ontological Dependence. In F. Correia & B. Schnieder (Eds.), *Metaphysical grounding: understanding the structure of reality* (p. 186). Cambridge University Press.

Koslicki, K. (2014). Mereological Sums and Singular Terms. In S. Kleinschmidt (Ed.), *Mereology and Location* (pp. 209–235). Oxford University Press.

Koslicki, K. (2018). *Form, Matter, Substance.* Oxford, UK: Oxford University Press.

Kriegel, U. (2018). *Brentano's Philosophical System: Mind, Being, Value.* Oxford: Oxford University Press.

Ladyman, J., & Ross, D. (2007). (J. Ladyman & D. Ross, Eds.). Oxford University Press.

Lando, G. (2017). *Mereology: A Philosophical Introduction.* Bloomsbury, London.

Lange, M. (2016). *Because Without Cause: Non-Causal Explanations in Science and Mathematics.* Oxford, England: Oxford University Press USA.

Langton, R., & Lewis, D. K. (1998). Defining 'Intrinsic'. *Philosophy and Phenomenological Research*, *58*(2), 333–345. doi: 10.2307/2653512

Leonard, H. S., & Goodman, N. (1940). The Calculus of Individuals and its Uses. *Journal of Symbolic Logic*, *5*(2), 45–55. doi: 10.2307/2266169

Leśniewski, S. (1916). *Podstawy ogólnej teorii mnogości i.* Moskow: Prace Polskiego Koła Naukowego w Moskwie, Sekcya matematyczno-przyrodnicza; Eng. trans. by D. I. Barnett: 'Foundations of the General Theory of Sets. I', in S. Leśniewski, *Collected Works* (ed. by S. J. Surma *et al.*), Dordrecht: Kluwer, 1992, Vol. 1, pp. 129–173.

Leśniewski, S. (1927-1931). 'O podstawach matematyki' *Przeglad Filozoficzny*, 30: 164–206; 31: 261–291; 32: 60–101; 33: 77–105; 34: 142–170; Eng. trans. by D. I. Barnett: 'On the Foundations of Mathematics', in S. Leśniewski, *Collected Works* (ed. by S. J. Surma *et al.*), Dordrecht: Kluwer, 1992, Vol. 1, pp. 174–382.

Lewis, D. K. (1966). An Argument for the Identity Theory. *Journal of Philosophy*, *63*(1), 17–25. doi: 10.2307/2024524

Lewis, D. K. (1969). *Convention: A Philosophical Study.* Cambridge, MA, USA: Wiley-Blackwell.

Lewis, D. K. (1970). Nominalistic Set Theory. *Noûs*, *4*(3), 225–240. doi: 10.2307/2214424

Lewis, D. K. (1972). Psychophysical and Theoretical Identifications. *Australasian Journal of Philosophy*, *50*(3), 249–258. doi: 10.1080/00048407212341301

Lewis, D. K. (1979). Scorekeeping in a Language Game. *Journal of Philosophical Logic*, *8*(1), 339–359. doi: 10.1007/bf00258436

Lewis, D. K. (1983). New work for a theory of universals. *Australasian journal of philosophy*, *61*(4), 343–377.

Lewis, D. K. (1984). Putnam's Paradox. *Australasian Journal of Philosophy*, *62*(3), 221–236. doi: 10.1080/00048408412340013

Lewis, D. K. (1986a). *On the Plurality of Worlds.* Oxford: Blackwell.

Lewis, D. K. (1986b). *Philosophical Papers Vol. II.* Oxford University Press.

Lewis, D. K. (1986c). Causation. In D. K. Lewis (Ed.), *Philosophical papers vol. ii* (pp. 159–213). Oxford University Press.

Lewis, D. K. (1986d). Causal Explanation. In D. K. Lewis (Ed.), *Philosophical Papers Vol. II* (pp. 214–240). Oxford University Press.

Lewis, D. K. (1990). What Experience Teaches. In W. G. Lycan (Ed.), *Mind and cognition: a reader* (pp. 29–57). Blackwell.

Lewis, D. K. (1991). *Parts of Classes*. Oxford: Blackwell.

Lewis, D. K. (1992). Meaning without Use: Reply to Hawthorne. *Australasian Journal of Philosophy*, *70*(1), 106–110. doi: 10.1080/00048408112340093

Lewis, D. K. (1993a). Many, but Almost One. In K. Cambell, J. Bacon, & L. Reinhardt (Eds.), *Ontology, Causality and Mind: Essays on the Philosophy of D. M. Armstrong* (pp. 23–38). Cambridge University Press.

Lewis, D. K. (1993b). Mathematics is Megethology. *Philosophia Mathematica*, *1*(1), 3–23. doi: 10.1093/philmat/1.1.3

Lewis, D. K. (1994). Humean Supervenience Debugged. *Mind*, *103*(412), 473–490. doi: 10.1093/mind/103.412.473

Lewis, D. K. (1999). *Papers in Metaphysics and Epistemology: Volume 2*. Cambridge, UK: Cambridge University Press.

Lewis, D. K. (2000). Causation as Influence. *Journal of Philosophy*, *97*(4), 182–197.

Lipton, P. (1990). Contrastive Explanation. *Royal Institute of Philosophy Supplement*, *27*, 247–266. doi: 10.1017/s1358246100005130

List, C. (2021). Levels of Description and Levels of Reality: A General Framework. In A. Wilson & K. Robertson (Eds.), *Levels of Explanation*. Oxford University Press.

Lowe, E. J. (2016). Non-individuals. In T. Pradeu & A. Guay (Eds.), *Individuals Across The Sciences.* Oxford University Press.

Lyons, J. C. (2009). *Perception and Basic Beliefs: Zombies, Modules and the Problem of the External World* (J. Lyons, Ed.). New York, US: Oxford University Press.

Magidor, O. (2015). Why Neither Diachronic Universalism nor the Argument From Vagueness Establishes Perdurantism. *Canadian Journal of Philosophy*, *45*(1), 113–126. doi: 10.1080/00455091.2015.1029572

Markosian, N. (1998a). Brutal Composition. *Philosophical Studies*, *92*(3), 211–249.

Markosian, N. (1998b). Simples. *Australasian Journal of Philosophy*, *76*(2), 213–228. doi: 10.1080/00048409812348361

Markosian, N. (2008). Restricted Composition. In T. Sider, J. Hawthorne, & D. W. Zimmerman (Eds.), *Contemporary Debates in Metaphysics* (pp. 341–63). Blackwell.

Markosian, N. (2014). A Spatial Approach to Mereology. In S. Keinschmidt (Ed.), *Mereology and Location.* Oxford University Press.

Mathers, D. (2019). Against Sider on Fundamentality. *Erkenntnis*, *84*(4), 823–838. doi: 10.1007/s10670-018-9982-y

Maudlin, T. (1998). Part and Whole in Quantum Mechanics. In E. Castellani (Ed.), *Interpreting bodies* (p. pp.46-60). Princeton University Press.

McDaniel, K. (2017). *The Fragmentation of Being.* New York: Oxford University Press.

Meincke, A. S., & Dupré, J. (Eds.). (2020). *Biological Identity: Perspectives From Metaphysics and the Philosophy of Biology.* New York: Routledge.

Merricks, T. (2001). *Objects and Persons.* New York: Oxford University Press.

Merricks, T. (2005). Composition and Vagueness. *Mind*, *114*(455), 615–637. doi: 10.1093/mind/fzi615

Merrill, G. H. (1980). The Model-Theoretic Argument Against Realism. *Philosophy of Science*, *47*(1), 69–81. doi: 10.1086/288910

Miller, K. (2006). Non-Mereological Universalism. *European Journal of Philosophy*, *14*(3), 404–422. doi: 10.1111/j.1468-0378.2006.00232.x

Nolan, D. (2011). Categories and Ontological Dependence. *The Monist*, *94*(2), 277–301. doi: 10.5840/monist201194214

Nolan, D. (2014). Hyperintensional Metaphysics. *Philosophical Studies*, *171*(1), 149–160. doi: 10.1007/s11098-013-0251-2

Olson, E. T. (1995). Why I Have No Hands. *Theoria*, *61*(2), 182–197. doi: 10.1111/j.1755-2567.1995.tb00496.x

Openshaw, J. (2021). Thinking About Many. *Synthese*, *199*(1-2), 2863–2882. doi: 10.1007/s11229-020-02904-9

Pearce, K. L. (2017). Mereological Idealism. In K. Pearce & T. Goldschmidt (Eds.), *Idealism: New Essays in Metaphysics* (pp. 200–216). Oxford University Press.

Pritchard, D. (2005). *Epistemic Luck*. Oxford University Press UK.

Pritchard, D. (2007). Anti-Luck Epistemology. *Synthese*, *158*(3), 277–297. doi: 10.1007/s11229-006-9039-7

Pritchard, D. (2018). Anti-Luck Virtue Epistemology and Epistemic Defeat. *Synthese*, *195*(7), 3065–3077. doi: 10.1007/s11229-016-1074-4

Pryor, J. (2000). The Skeptic and the Dogmatist. *Noûs*, *34*(4), 517–549. doi: 10.1111/0029-4624.00277

Quine, W. V. O. (1948). On What There Is. *Review of Metaphysics*, *2*(1), 21–38.

Quine, W. V. O. (1951a). On Carnap's Views on Ontology. *Philosophical Studies*, *2*(5), 65–72. doi: 10.1007/bf02199422

Quine, W. V. O. (1951b). Ontology and Ideology. *Philosophical Studies*, *2*(1), 11–15. doi: 10.1007/bf02198233

Quine, W. V. O. (1960). *Word and Object*. Cambridge, MA, USA: MIT Press.

Quine, W. V. O. (1968). Ontological Relativity. *Journal of Philosophy*, *65*(7), 185–212. doi: 10.2307/2024305

Rea, M. C. (1998). In Defense of Mereological Universalism. *Philosophy and Phenomenological Research*, *58*(2), 347–360. doi: 10.2307/2653513

Remhof, J. (2017). Defending Nietzsche's Constructivism About Objects. *European Journal of Philosophy*, *25*(2), 1132–1158. doi: 10.1111/ejop .12267

Remhof, J. (2018). *Nietzsche's Constructivism: A Metaphysics of Material Objects*. New York: Routledge.

Rettler, B. (2018). Mereological Nihilism and Puzzles About Material Objects. *Pacific Philosophical Quarterly*, *99*(4), 842–868. doi: 10.1111/ papq.12220

Richardson, J. (1996). *Nietzsche's System*. New York: Oxford University Press.

Sattig, T. (2015). *The Double Lives of Objects: An Essay in the Metaphysics of the Ordinary World*. Oxford, GB: Oxford University Press.

Schaffer, J. (2003a). Is There a Fundamental Level? *Noûs*, *37*(3), 498–517. doi: 10.1111/1468-0068.00448

Schaffer, J. (2003b). Overdetermining Causes. *Philosophical Studies*, *114*(1-2), 23–45. doi: 10.1023/a:1024457117218

Schaffer, J. (2004). Two Conceptions of Sparse Properties. *Pacific Philosophical Quarterly*, *85*(1), 92–102. doi: 10.1111/j.1468-0114.2004.00189.x

Schaffer, J. (2009). On What Grounds What. In D. Manley, D. J. Chalmers, & R. Wasserman (Eds.), *Metametaphysics: New Essays on the Foundations of Ontology* (pp. 347–383). Oxford University Press.

Schaffer, J. (2010a). Monism: The Priority of the Whole. *Philosophical Review*, *119*(1), 31–76.

Schaffer, J. (2010b). The Internal Relatedness of All Things. *Mind*, *119*(474), 341–376.

Schaffer, J. (2012). Why the World has Parts: Reply to Horgan and Potrč. In Goff (Ed.), *Spinoza on Monism*.

Schaffer, J. (2013). The Action of the Whole. *Aristotelian Society Supplementary Volume*, *87*(1), 67–87. doi: 10.1111/j.1467-8349.2013.00220.x

Schaffer, J. (2014). *Writing the Book of the World* (Book Review). *Philosophical Review*, *123*(1), 125–129. doi: 10.1215/00318108-2366553

Schaffer, J. (2017). Laws for Metaphysical Explanation. *Philosophical Issues*, *27*(1), 302–321. doi: 10.1111/phis.12111

Schellenberg, S. (2018). *The Unity of Perception: Content, Consciousness, Evidence.* Oxford: Oxford University Press.

Schwarz, W. (2004). *Reference Magnetism.* https://www.umsu.de/wo/2004/325.

Schwarz, W. (2014). Against Magnetism. *Australasian Journal of Philosophy*, *92*(1), 17–36. doi: 10.1080/00048402.2013.765900

Sider, T. (1993). Van Inwagen and the Possibility of Gunk. *Analysis*, *53*(4), 285–289. doi: 10.1093/analys/53.4.285

Sider, T. (1995). Sparseness, Immanence, and Naturalness. *Noûs*, *29*(3), 360–377. doi: 10.2307/2215604

Sider, T. (1997). Four-Dimensionalism. *Philosophical Review*, *106*(2), 197–231. doi: 10.2307/2998357

Sider, T. (2001). *Four-Dimensionalism: An Ontology of Persistence and Time.* Oxford University Press.

Sider, T. (2004). Précis of "Four-Dimensionalism". *Philosophy and Phenomenological Research*, *68*(3), 642–647.

Sider, T. (2007). Parthood. *Philosophical Review*, *116*(1), 51–91. doi: 10.1215/00318108-2006-022

Sider, T. (2009). Ontological Realism. In D. J. Chalmers, D. Manley, & R. Wasserman (Eds.), *Metametaphysics: New Essays on the Foundations of Ontology* (pp. 384–423). Oxford University Press.

Sider, T. (2011). *Writing the Book of the World.* Oxford University Press.

Sider, T. (2013). Against Parthood. *Oxford Studies in Metaphysics*, *8*, 237–293.

Simons, P. (1982). The Formalisation of Husserl's Theory of Wholes and Parts. In B. Smith (Ed.), *Parts and Moments. Studies in Logic and Formal Ontology* (pp. 111–159). Philosophia Verlag.

Simons, P. (1987). *Parts: A Study in Ontology*. Oxford, England: Clarendon Press.

Simons, P. (1992). *Philosophy and Logic in Central Europe From Bolzano to Tarski*. Dordrecht, Netherland: Kluwer Academic Publishers.

Simons, P. (2006). Real Wholes, Real Parts: Mereology Without Algebra. *Journal of Philosophy*, *103*(12), 597–613. doi: 10.5840/jphil2006103122

Simpson, W. M. R. (2023). *Hylomorphism*. Cambridge University Press.

Skow, B. (2016). *Reasons Why*. Oxford, England and New York, NY, USA: Oxford University Press UK.

Smith, B. (Ed.). (1982). *Parts and Moments. Studies in Logic and Formal Ontology*. Philosophia Verlag.

Smith, B. (1987). The Substance of Brentano's Ontology. *Topoi*, *6*(1), 39–49. doi: 10.1007/bf00141817

Smith, B. (Ed.). (1988). *Foundations of Gestalt Theory*. Munich, Philosophia.

Smith, D. W. (2013). *Husserl*. London: Routledge.

Sosa, E. (1993). Putnam's Pragmatic Realism. *Journal of Philosophy*, *90*(12), 605–626.

Sosa, E. (2000). Reliabilism and Intellectual Virtue. In G. Axtell (Ed.), *Knowledge, Belief, and Character: Readings in Virtue Epistemology* (pp. 33–40). Rowman & Littlefield Publishers.

Spencer, J. (2021). On the Explanatory Demands of the Special Composition Question. *Synthese*, *198*(Suppl 18), 4375–4388. doi: 10.1007/s11229-019 -02147-3

Tahko, T. E. (2009). Against the Vagueness Argument. *Philosophia*, *37*(2), 335–340. doi: 10.1007/s11406-008-9172-2

Tahko, T. E. (2018). Fundamentality and Ontological Minimality. In R. Bliss & G. Priest (Eds.), *Reality and its Structure: Essays in Fundamentality* (pp. 237–253). Oxford University Press.

Tarski, A. (1956). "Foundations of the Geometry of Solids". In edited by J.H. Woodger (Ed.), *Logic, Semantics, Metamathematics.* 24–29, Oxford: Clarendon Press.

Taylor, E. (2016). Naturalness in Context. *Inquiry: An Interdisciplinary Journal of Philosophy*, *59*(4), 1–24. doi: 10.1080/0020174x.2015.1050450

Temple, D. (1988). The Contrast Theory of Why-Questions. *Philosophy of Science*, *55*(1), 141–151. doi: 10.1086/289421

Thomasson, A. L. (Ed.). (2007). *Ordinary Objects.* New York: Oxford University Press.

Thompson, N. (2016). Is Naturalness Natural? *American Philosophical Quarterly*, *53*(4), 381–396.

Thomson, J. J. (1983). Parthood and Identity Across Time. *Journal of Philosophy*, *80*(4), 201–220. doi: 10.2307/2026004

Torza, A. (2008). Vague Existence. In D. W. Zimmerman (Ed.), *Oxford Studies in Metaphysics* (pp. 201–234). Oxford University Press.

Unger, P. (1979a). I Do Not Exist. In G. F. Macdonald (Ed.), *Perception and Identity.* Cornell University Press.

Unger, P. (1979b). There Are No Ordinary Things. *Synthese*, *41*(2), 117–154. doi: 10.1007/BF00869568

Unger, P. (1979c). Why There Are No People. *Midwest Studies in Philosophy*, *4*(1), 177–222. doi: 10.1111/j.1475-4975.1979.tb00377.x

Unger, P. (1980). The Problem of the Many. *Midwest Studies in Philosophy*, *5*(1), 411–468. doi: 10.1111/j.1475-4975.1980.tb00416.x

van Cleve, J. (1986). Mereological Essentialism, Mereological Conjunctivism, and Identity Through Time. *Midwest Studies in Philosophy*, *11*(1), 141–156. doi: 10.1111/j.1475-4975.1986.tb00491.x

van Cleve, J. (2008). The Moon and Sixpence : A Defense of Mereological Universalism. In T. Sider, J. Hawthorne, & D. W. Zimmerman (Eds.), *Contemporary Debates in Metaphysics.* Blackwell.

Van Fraassen, B. C. (1980). *The Scientific Image.* Oxford University Press.

van Inwagen, P. (1981). The Doctrine of Arbitrary Undetached Parts. *Pacific Philosophical Quarterly*, *62*(2), 123–137. doi: 10.1111/j.1468-0114.1981.tb00051.x

van Inwagen, P. (1987). When Are Objects Parts? *Philosophical Perspectives*, *1*, 21–47. doi: 10.2307/2214142

257

van Inwagen, P. (1990). *Material Beings*. Cornell University Press.

van Inwagen, P. (1998). Meta-ontology. *Erkenntnis*, *48*(2-3), 233–50. doi: 10.1023/A:1005323618026

Varzi, A. C. (2000). Mereological commitments. *dialectica*, *54*(4), 283–305.

Varzi, A. C. (2003). Perdurantism, Universalism and Quantifiers. *Australasian Journal of Philosophy*, *81*(2), 208–215. doi: 10.1080/713659632

Varzi, A. C. (2008). The Extensionality of Parthood and Composition. *Philosophical Quarterly*, *58*(230), 108–133. doi: 10.1111/j.1467-9213.2007.542.x

Varzi, A. C. (2013). Undetached Parts and Disconnected Wholes. In C. Svennerlind, A. Jan, & R. Ingthorsson (Eds.), *Johanssonian Investigations: Essays in Honour of Ingvar Johansson on His Seventieth Birthday* (pp. 696–708). Ontos Verlag.

Warren, J. (in press). Reference Magnetism Does Not Exist. *Erkenntnis*, 1–9. doi: 10.1007/s10670-022-00654-3

Weatherson, B. (2003). What Good Are Counterexamples? *Philosophical Studies*, *115*(1), 1–31. doi: 10.1023/a:1024961917413

Weatherson, B. (2006). The Asymmetric Magnets Problem. *Philosophical Perspectives*, *20*(1), 479–492. doi: 10.1111/j.1520-8583.2006.00116.x

Williams, J. R. G. (2008a). Gavagai Again. *Synthese*, *164*(2), 235–259. doi: 10.1007/s11229-007-9224-3

Williams, J. R. G. (2008b). Ontic Vagueness and Metaphysical Indeterminacy. *Philosophy Compass*, *3*(4), 763–788. doi: 10.1111/j.1747-9991.2008.00151.x

Williams, J. R. G. (2010). Fundamental and Derivative Truths. *Mind*, *119*(473), 103–141. doi: 10.1093/mind/fzp137

Williamson, T. (2000). *Knowledge and its Limits.* New York: Oxford University Press.

Wilson, A. (2018). Metaphysical Causation. *Noûs*, *52*(4), 723–751. doi: 10.1111/nous.12190

Wilson, J. M. (2021). *Metaphysical Emergence.* Oxford: Oxford University Press.

Wittgenstein, L. (1953). *Philosophical Investigations* (G. E. M. Anscombe, Ed.). New York, NY, USA: Wiley-Blackwell.

Wittgenstein, L. (1958). *The Blue and Brown Books: Preliminary Studies for the "Philosophical Investigations"* (R. Rhees, Ed.). Oxford, England: Harper & Row.

Ylikoski, P., & Kuorikoski, J. (2010). Dissecting Explanatory Power. *Philosophical Studies*, *148*(2), 201–219. doi: 10.1007/s11098-008-9324-z

Zahavi, D. (2017). *Husserl's Legacy: Phenomenology, Metaphysics, and Transcendental Philosophy.* Oxford, United Kingdom: Oxford University Press.

Zeh, H. D. (2003). There is No "First" Quantization. *Physics Letters A*, *309*(5-6), 329–334.

Zimmerman, D. W. (1996). Could Extended Objects Be Made Out of Simple Parts? An Argument for "Atomless Gunk". *Philosophy and Phenomenological Research*, *56*(1), 1–29. doi: 10.2307/2108463