ONTOMETRY, PRIORITY, AND TELEOLOGY

A Defense of Classical Platonism

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A dissertation submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Philosophy

Chapel Hill

2010

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Abstract

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Ontology, Priority, and Teleology: A Defense of Classical Platonism
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Classical Platonism is the thesis that, metaphysically, the most fundamental elements of the world are ends or purposes, and that things are metaphysically dependent on their ends. Classical Platonists believe that teleology is a real feature of the world, and that metaphysical dependence--or “metaphysical priority”--is itself teleological. This dissertation defends Classical Platonism in four chapters.

In chapter one I argue that the proper scope of ontological investigation is metaphysical priority rather than existence, but that priority cannot be “brute”--i.e. unanalyzable. My argument is that, when the topic is metaphysical, questions of existence have trivial answers, and ontological questions do not. So whatever the ontological questions are, they are not questions about existence. Instead, I argue that they are questions about priority.

In chapter two I argue for Classical Platonism by showing that the sense in which ordinary material objects are something “over and above” their parts is a teleological sense. The intuitive distinction between integrated objects, which are in some sense “prior” to their parts, and mere heaps, which are not, is that the former and not the latter are teleologically prior to their parts.

In chapter three I present a detailed account of the Classical Platonist’s ontology, which is an ontology of Forms. The Forms include entities like perfect cat-health and perfect knifehood, which are standards against which the excellence of things like cats and knives are measured.
After explaining what the Forms are, I show that teleology is basic and indispensable to any theory of universals--i.e. properties and relations that are somehow “shared” in their entirety by distinct objects.

In chapter four I respond to objections to Classical Platonism: that it allows for circular chains of metaphysical dependence, that it makes objects metaphysically dependent on what does not exist, and that it is unable to account for its own requirement that *matter* have a proper function.
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1 Classical Platonism and Metaontology

Contemporary discussions of ontology have produced two kinds of theories about it: existence theories and brute priority theories. Both claim that ontology is ambitious—i.e. that it investigates substantive questions not asked by science—and yet each fails to account for this ambition. Existence theories fail because certain existence claims are trivial; brute priority theories fail because their notion of priority, when intelligible, is borrowed from science in a way that renders their project unambitious. In light of these considerations I propose a third option—Classical Platonism—which identifies metaphysical priority with functional teleology.

1. Two Accounts of Ontology

The idea that the world contains metaphysically basic elements—elements in virtue of which all other things exist and upon which all other things depend—is an intuitive one, but it does not admit of an uncontroversial analysis. Yet today metaphysicians have at their disposal a multitude of accounts of priority and dependence, and with them, a multitude of accounts of what it is to be a metaphysically fundamental element of being. The philosophical name for such an element is “primary substance.”

Ontology is the philosophical study of primary substance. It aims to discover what the primary substances are, to elucidate the relations in terms of which their primacy is defined, and to do so in light of various philosophical puzzles, such as the One over Many, the puzzle of change, and Theseus’ Ship. Ontological theories are theories about the world’s most
metaphysically basic constituents—what they are, what makes them basic, and how they relate to everything else.

In characterizing ontology this way I invoke an Aristotelian doctrine, according to which “the question of being is just the question of substance.”¹ This doctrine is controversial. Many philosophers claim that they cannot understand such obscure notions as that of priority and primary substance. To the extent that there is such a project as ontology, they think it should be concerned with what exists. They think that the question of being is not the question of substance, but a much simpler one, expressed in the three Anglo-Saxon monosyllables “what is there?” We’ll call this alternative view the existence theory of ontology, and its defenders existence theorists, and call the first view the priority theory of ontology, and its defenders priority theorists.²

Just as realists and nominalists have competing philosophical theories about the nature of a well-established discipline, namely mathematics, so do existence theorists and priority theorists have competing philosophical interpretations of ontology, which, in the twentieth century, was most notably reestablished in the work of Armstrong, Kripke, Lewis, Quine, Van Inwagen, and others.³ There is an asymmetry, of course: realists and nominalists do metaphysics while theorizing about a science, whereas existence- and priority theorists do metaphysics while theorizing about metaphysics. Hence, the debate over ontology is a reflective one. The question of existence versus priority is a question about what we philosophers have been doing. This

¹ Metaphysics 1028b2-4.
² Quine (1948) presents the most canonical piece of existence theory, though not under that name. Contemporary existence theorists include Azzouni (2004), Hofweber (2005), Sider (2009), and Van Inwagen (1998). For contemporary defenses of priority theory, see Fine (2001) and Schaffer (2009).
reflection is not new; indeed, the re-canonization of metaphysics in the twentieth century occurred alongside a debate about metaphysics—Quine’s and Carnap’s—in which existence theories were left alone to contend with the Positivist monster, and priority theory, long thought dead, went unrepresented. Yet today, the topic of metaphysical priority attracts new attention. Just as mathematical theories are easy to recognize despite the controversy between realists and nominalists, so are ontological theories easily recognizable too, despite the controversy between existence theorists and priority theorists. The debate between existence theorists and priority theorists is a debate over the scope and nature of ontological investigation, just as the debate between realists and nominalists is a debate over the scope and nature of mathematical investigation.

Following Jonathan Schaffer, we’ll distinguish existence- and priority theories by their different attitudes toward questions of existence: priority theorists adopt the permissive stance, focusing their inquiry on the primary substances; while existence theorists adopt the restrictive stance, focusing their inquiry on what exists.4

To adopt the permissive stance is to hold that existence questions—i.e. instances of the schema “does X exist?”—have obvious answers when their topic is metaphysical, that the answer is usually “yes,” and that such questions are therefore not the end of metaphysical investigation.5 In other words, priority theorists hold that existence is cheap; everything exists in some sense. This includes numbers, fictional characters, round squares, the gods of every religion, and the mereological sum of Proclus the Successor and his eponymous lunar crater.

4 Schaffer (2009).
5 The qualifier “when the topic is metaphysical” cannot be over-emphasized. To adopt the permissive stance is to take up an attitude towards existence questions in metaphysics, as opposed to existence questions that arise in the sciences. See premise (c) of the Triviality Argument below.
Yet priority theorists also claim to have sparse ontologies. For by their lights, one’s ontology includes not what one takes to exist, but what one takes to be the primary substances, which are some but not all of the things that exist. So although priority theorists will admit that numbers exist, they might also defend nominalism by arguing that numbers are not primary substances—i.e. that they are metaphysically dependent on something else. Similarly, priority theorists can admit that gods exist, but may also defend atheism by arguing that gods are fictional characters.6

To adopt the restrictive stance, by contrast, is to hold that existence questions seldom have obvious answers when their topic is metaphysical, that their answers are not usually “yes,” and that subsequently, they are interesting and suitable for metaphysical inquiry. In other words, existence theorists hold that existence is not cheap, and they tend to be as frugal with its attribution as priority theorists are with their notion of substantial primacy.

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6 See Schaffer (2009), §2.1 for an example of this strategy.
2. Their Mutual Presupposition: Ontology is Ambitious

What these two accounts of ontology agree on is that *ontology is ambitious*. In the anti-metaphysical preamble to *The Empirical Stance*, Bas Van Fraassen presents two ways that ontology might proceed in its investigations, one of which is “ambitious,” the other of which is, by contrast, “modest.” He distinguishes them by their relation to science:

…Actually, this project [i.e. ontology] takes two forms, one apparently modest and the other ambitious. The modest is to bring to light the ontic commitments of our best theories in science; the ambitious is to continue science so as to answer questions scientists do not ask, but in the same way that science answers its questions. The modest project may be no more than a deep-going study of the sciences, although perhaps charged with a contentious presupposition about what such a study will bring to light. Leave that aside for now. Let us consider the more relevant ambitious project of an ontology to go beyond answers to questions already dealt with by the sciences themselves. This is the project to engage in metaphysics as an extension of the sciences, putatively pursued by the same means and realizing the same values.\(^7\)

To claim that ontology is ambitious, then, is to claim two things: first, that it “answers questions scientists do not ask,” and second, that it does so “in the same way that science answers its questions, putatively pursued by the same means and realizing the same values.” The second condition requires, among other things, that the answers to ontological questions are not *trivial*—i.e. their answers are not immediately obvious to competent speakers of English in a way that renders further investigation unnecessary. If it turned out that either (a) ontological questions are already asked by scientists, or (b) that ontological questions all have trivial answers, then ontology would be unambitious. So any theory of ontology which entails either (a) or (b) is inconsistent with ontology’s ambition.

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\(^7\) Van Fraassen (2002), pp. 11.
Both existence theorists and brute priority theorists argue that ontology is ambitious. But because each side entails either (a) or (b), neither is able to account for this ambition. Existence theories entail (b), that the central questions of ontology are trivial; brute priority theories entail (a), that the central questions of ontology are, when intelligible, already answered by science.

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8 Fine (2001) argues that the notion of grounding used in metaphysics is irreducible to any scientific notion, and hence that metaphysical questions are not answered by science. Sider (2007) claims that answers to the special composition question are all “empirically adequate,” suggesting—though not requiring—that it is a distinctly metaphysical question. Van Inwagen (1998) argues that metaphysics, not science, is charged with regimenting scientific language in a way that yields metaphysical results. For more on the question of how ontology could be ambitious, see Hofweber (forthcoming).
3. How Existence Theories Lose Ambition

The *Triviality Argument*,⁹ as I shall call it, is the most well-known argument *against* existence theories of ontology. It purports to show that existence theories are incompatible with ontology’s ambition because they entail (b), that the central questions of ontology have trivial answers:

- c. If the task of ontology is to say what exists, then the ontological status of numbers, properties, propositions, composites, and fictional characters is trivial.
- d. But the ontological status of numbers, properties, propositions, composites, and fictional characters is not trivial.
- e. So it is not true that the task of ontology is to say what exists.

Because premise (d) follows from the idea that ontology is ambitious, and because (e) follows from (c) and (d), it is (c) that does all the philosophical work.

Premise (c) is justified by a series of short arguments from trivially true premises, each of which shows that one of the kinds of entities in question exists. As an example, consider the following argument for the existence of numbers:¹⁰

- f. There are just as many bachelors as there are unmarried men.
- g. So the number of bachelors is the same as the number of unmarried men.
- h. So there is a number that numbers both the bachelors and the unmarried men.

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⁹ The most recent versions of this argument are presented in Fine (2001), Hofweber (2005), and Schaffer (2009). Only Schaffer and Fine use the argument against existence theories of ontology; Hofweber argues for a distinction between two kinds of quantification, only one of which expresses ontological commitment.

¹⁰ Hofweber (2005).
The argument looks sound. (f) is indisputably true, since it is true by definition. (f) and (g) are truth-conditionally equivalent, and (h) follows from (g) in classical predicate logic. So it seems the existence of numbers—which, according to existence theorists, is a central question of ontology—can be proven from analytic premises! Since the existence of numbers is so easily proven, it would seem to be a trivial matter, with little ambition in its philosophical investigation.

Argument (f)-(h) is not one of a kind; recent literature has witnessed many variants, each of which concerns a different kind of entity. There are now trivial proofs for the existence of numbers, properties, propositions, composites, and fictional characters—virtually all the entities discussed by ontologists. Since existence theories claim that the task of ontology is to investigate which things exist, arguments like (f)-(h) together undermine the ambitiousness of existence theories.

Existence theorists are not helpless against the Triviality Argument. Jodi Azzouni, an existence theorist, denies that the quantificational idiom “there is” in (h) carries any ontological commitment—i.e. that it implies anything about what exists. Distinguishing two sorts of quantification in natural language, Thomas Hofweber argues that (h) only follows from (f)-(g) under a reading of “there is” that carries no ontological commitment. Sider argues that (h)

11 Fine (2001), Hofwever (2005), and Schaffer (2009). Hofweber’s arguments for numbers, properties, and propositions proceed from analytically true claims like (f)—e.g. “either it is true or it is false that it is raining; therefore there is a proposition that is either true or false,” and “either Fido is a dog or not; therefore there is a property that Fido either does or does not have.” Schaffer’s arguments for numbers and properties are similar, but his arguments for composites and fictional characters proceed from obvious empirical truths instead of proceeding from analyticities—e.g. “my body has parts, such as hands; therefore something has parts,” and “Sherlock Holmes is a fictional character; therefore something is a fictional character.”

12 Azzouni (2006), pp.82.

13 Ibid, pp.55.

14 Hofweber (2005).
establishes the existence of numbers only if the natural meaning of “there exists”--the one that “carves reality at the joints”--is determined by our use of claims like (f)-(g).\(^\text{15}\) Peter Van Inwagen employs the notion of paraphrase to argue that (h) might not carry ontological commitment, depending on available paraphrases.\(^\text{16}\) There are few knock-down arguments in philosophy, and, unsurprisingly, the Triviality Argument is not one of them.

But an argument does not have to be knock-down for it to be sound, and I for one believe it is sound. Azzouni’s “separation thesis,” according to which quantificational idioms carry no existential commitment, precludes the most natural understanding of their truth conditions. Hofweber’s similar denial about inference-preserving quantification in natural language rests on the distinction between failing to refer and successfully referring to a nonexistent object--one that blurs when attempting to say what reference to nonexistents would have to be.\(^\text{17}\) Sider’s appeal to natural quantifier meanings employs a notion--naturalness--that is far richer than that of existence, and which leaves Sider’s view looking more like a priority theory than an existence theory. Finally, one cannot avoid a theory’s commitments by accepting something synonymous with it,\(^\text{18}\) but it is unclear what Van Inwagen’s notion of paraphrase could be if not something like synonymy. I conclude that existence theories fail to account for ontology’s ambition. Brute priority theories, however, are no better off.

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\(^{15}\) Sider (2009).

\(^{16}\) Van Inwagen (1998).

\(^{17}\) Hofweber (2000).

\(^{18}\) Alston (1957) and Jackson (1980).
4. How Brute Priority Theories Lose Ambition

Priority theories come in two types: \textit{brute} priority theories, which hold that metaphysical priority is primitive and unanalyzable; and \textit{defined} priority theories, which, as their name suggests, define metaphysical priority in more basic terms.

The \textit{Intelligibility Argument} purports to show that brute priority theories are incompatible with ontology’s ambition:\footnote{The argument is a variation on one presented in Hofweber (2009), though I ultimately draw a different conclusion. We agree that a primitive, distinctly metaphysical notion of priority is unintelligible, but he goes on to defend an existence theory of ontology while I defend a defined priority theory.}

i. If the task of ontology is to say what is primary in a brute, purely metaphysical sense, then ontological questions are unintelligible.

j. But ontological questions are intelligible.

k. So it is not true that the task of ontology is to say what is primary in a brute, purely metaphysical sense.

Premise (j) just follows from the idea that ontology is ambitious, and (k) just follows from (i) and (j); therefore it is (i) that does all the philosophical work.

Premise (i) is motivated by the idea that, while there are many intelligible notions of priority, none of them are \textit{primitively and distinctly metaphysical}. Rather, what contemporary theorists call “metaphysical priority” is a family of vaguely similar relations, many of which come from the sciences, and none of which can be identified with the metaphysical notion without rendering ontology unambitious. This is revealed in the examples from Jonathan Schaffer’s defense of priority theory.
In “Monism” and “On What Grounds What,” Schaffer defends a brute notion of metaphysical priority, claiming all of the following as cases of it: (l) the relation between the quantum state of an entangled system and the states of its components, (m) the relation between an entity and its singleton, (n) the relation between Swiss cheese and its holes, (o) the relation between truths and the world, and (p) the relation between an action’s piety and Euthyphro’s gods’ love of it. The problem is that, although each of (l)-(p) is an example of a priority relation, none of them are examples of the same relation, nor are any of them particularly metaphysical.

Consider the first case, (l). It is true that the quantum state of an entangled system is prior to its components, but only in a mathematical sense—i.e. only in the sense that the former is not mathematically derivable from the latter. Schaffer writes that “the EPR state is… not derivable from the state of its two particles,” and this is supposed to suggest something about their metaphysical status. But is mathematical derivability the same thing as metaphysical priority? Not if ontology is ambitious. The facts about mathematical derivability are already studied by another field, namely mathematics, and ontology has little to contribute. Example (l) does not illustrate anything primitively metaphysical, only something mathematical.

The same is true for (m). An entity is indeed prior to its singleton, but only in the sense that the latter is defined in terms of the former. In set theory, sets are defined by their members,

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20 R is a priority relation iff R is an anti-symmetric, irreflexive, transitive relation with a lower bound. Some of the relations from (l)-(p) are like priority relations, in that they have most but not all of these formal properties. Mathematical derivability, for instance, lacks asymmetry. Unless the properties they lack are distinctly relevant to our discussion, however, these priority-like relations will also be referred to as “priority relations.”

21 Schaffer (2010).

22 Additionally, Schaffer’s claim that metaphysical priority is irreflexive is incompatible with its being the same thing as mathematical derivability.
not vice versa. The sense of priority according to which entities are prior to singletons, then, is not the priority of set-theoretic definition. Yet set-theoretic definition is not the same thing as metaphysical priority—no more than the latter is the same as mathematical derivability. Metaphysical priority cannot be identified with the set-theoretic priority of entity to singleton, and so (m), like (l), fails to illustrate anything distinctly metaphysical.

Likewise for (n), the case of the Swiss cheese and its holes. The cheese is indeed prior to its holes in the sense that the holes are proper parts of it. The holes are in the cheese in the same way that pages are in a book or stitches are in a sweater. The priority of cheese to holes is a matter of mereology, which, like mathematics, has applications within ontology. But if ontology is ambitious, it should not reduce to mereology any more than it should reduce to set theory or mathematics.

Nor should metaphysical priority be identified with the relation obtaining between truths and the world—the “true of” relation. For one thing, most alleged cases of metaphysical priority, including (l)-(p), involve pairs of entities that cannot have truth values. Furthermore, because ontology does not tell us exactly which claims are true, its concern with truth would have to be the investigation of the truth predicate’s semantic and syntactic properties. But this latter task already falls in the domains of linguistics and logic. Linguistic science is one thing,

\[\text{23 The protagonist known as Argle defends this claim in a dialogue from Lewis and Lewis (1970). Alternatively, one might treat the holes as limits of the cheese.}\]

\[\text{24 Some philosophers contend that mereology is a piece of metaphysics, and that mereology is somehow itself metaphysical. This is false. The reason why it is false is that we can develop all kinds of mereologies—classical ones, paraconsistent ones, fuzzy ones—and mereology is just the study of their formal properties. There is a metaphysical question about which mereology, if any, is the correct one—the one that "carves reality at the joints," as it were. But such a question is no more part of mereology than the question of nominalism is part of algebra.}\]

\[\text{25 Lewis (2001).}\]
metaphysics another, and the “true of” relation, which barely resembles a priority relation to begin with, certainly does not look like a metaphysical one.

(Schaffer mentions the notion of a truthmaker when the topic of truth arises, but truthmakers are traditionally a piece of existence-theoretic ontology—i.e. they are the things that have to exist in order for a certain claim to be true.\(^{26}\) The notion of a truthmaker thus incurs the Triviality Argument. Schaffer, of course, defines truthmakers in terms of metaphysical priority, but this does not explain the notion at work so much as presuppose it. It is fully compatible, for instance, with “metaphysical priority” naming nothing but a family of vaguely similar but ultimately non-metaphysical relations.)

Finally, the relation between the love of Euthyphro’s gods and the piety of an action they love is, if not causal, at the very least a counterfactual relation: had the action not been pious, the gods would not have loved it, and—if our intuitions match Socrates’—\textit{not vice versa}.\(^{27}\) Yet metaphysical priority cannot be counterfactual dependence, for that would imply that every effect is metaphysically dependent on its cause—i.e. that causes are more fundamental than their effects, which seems false. When a baseball shatters a window by striking it, the shattering is counterfactually dependent on the striking, but the shattering is not less fundamental than the striking. Metaphysical priority is not counterfactual dependence. Just as (l)-(o) fail to distinguish a uniquely metaphysical relation, so does (p).

Brute metaphysical priority is not a single, univocal relation obtaining across cases like (l)-(p). Nor can it be any one of the relations illustrated in (l)-(p). To the extent that brute

\(^{26}\) Armstrong (2004).

\(^{27}\) See Hofweber (2009) for the original presentation of this criticism.
metaphysical priority is rendered intelligible through examples like (l)-(p), then, its study is ontologically unambitious. That is the Intelligibility Argument.

Defenders of brute priority have three available responses to the Intelligibility Argument. First, they could argue that metaphysical priority is a *univocal but multiply realizable relation*, which is differently realized in each of (l)-(p). Second, they could argue that metaphysical priority is a *univocal but determinable relation*, whose determinants include the different relations from (l)-(p). Finally, they could argue that metaphysical priority is a brute, distinctly metaphysical relation *in addition* to the other relations from (l)-(p). None of these strategies, however, will save brute priority theories from the Intelligibility Argument.

First, one might argue that metaphysical priority is multiply realizable, like the properties of *being food* or *being a wing*. Just as a variety of physical objects can all count as *food*, provided that they play the same role in nourishing an organism, and just as a variety of physical objects can all count as *wings*, provided that they play the same role in facilitating flight, so, under this proposal, would each relation from (l)-(p) count as metaphysical priority, provided that they play the same functional role in each instance. But what could this common functional role be? Beyond some formal properties like irreflexivity, transitivity, and the like, which do not constitute a functional role in any obvious sense, the relations from (l)-(p) resemble one another very little, and there does not seem to be a common role they play in each example. So appeals to multiple realizability will not save priority theories from the Intelligibility Argument.

Second, one might argue that metaphysical priority is a determinable relation, of which the relations in (l)-(p) are determinants. For this to be true, however, metaphysical priority must obey the logic of determinants and determinables. Central to this logic is the claim that *no single*...
thing can have more than one determinant of the same determinable at once. So if metaphysical priority is a determinable relation, and if the relations from (l)-(p) are among its determinants, then no two things can stand in more than one of the relations from (l)-(p) at once. Yet two things can stand in more than one of the relations from (l)-(p) at once: a pattern of dots on a dot-matrix, for instance, is not only mathematically derivable from the positions of the individual dots; it is defined in terms of them, and has them as proper parts. If metaphysical priority is a determinable relation, and if its determinants include the relations in (l)-(p), then no pair of objects can stand in more than one of the relations from (l)-(p) at once. Yet pairs of objects can stand in more than one of the relations from (l)-(p) at once. Appeals to determinable relations, therefore, will not save brute priority theories from the Intelligibility Argument.

Finally, defenders of a brute priority theory might hold that metaphysical priority is a brute relation in addition to those of mathematical derivability, parthood, and the like; and that the entities mentioned in (l)-(p) stand in relations of metaphysical priority in addition to the relations already mentioned. The problem with such an approach is that, if metaphysical priority cannot be defined, and if metaphysical priority is completely distinct from every other relation--such as derivability, definability, and causation--then ontological questions, like whether wholes are prior to their parts, cannot be settled just by settling whether wholes are definable in terms of their parts, or whether their features are derivable from their parts’ features, or whether the facts about them supervene on the facts about their parts. For whatever the facts are about definability, derivability, and the like, it is still a fair question to ask, “what does that have to do with metaphysical priority?” Why should the metaphysical priority of a whole follow, for instance, from the non-derivability of its features? If metaphysical priority is brute, and entirely distinct
from relations of derivability and the like, then there is no *prima facie* reason for inferring facts about the former from facts about the latter. An “in-addition” theory of brute metaphysical priority thus places ontology among the occult disciplines, leaving no clear method for its study. It will not save the brute priority theorist from the Intelligibility Argument.

In the end, there is no ambition in studying a brute relation of metaphysical priority. For as long as a tight circle of inter-definability links the notions of *metaphysical priority* and *primary substance*--with the primary substances just being whatever is metaphysically prior to everything, and metaphysical priority just being the relation borne by the primary substances to everything--ontology will have to operate by canvassing intuitions about brute metaphysical priority. Yet it is doubtful that we have such intuitions, especially once we distinguish brute metaphysical priority from other relations. Taking metaphysical priority and substantial primacy as primitives, then, will not suffice for the foundations of an ontological program. If ontology has ambition, there must be another way to account for it. Fortunately, there is.
5. Teleology and Philosophy

If instead of appealing to cheese, we turn to the example of an organism, and if instead of attending to the cheese’s holes we attend to the organisms’ organs, we find that wholes can be teleologically prior to their parts in addition to being mereologically prior to them; and that teleological priority obtains not only between organisms and their organs but also between other bits of the world, too: between actions, among artifacts, in agentive explanations, and in social institutions. The English language, moreover, affords a wealth of references to teleological priority: if we consider an example of an organism--such as a house cat--and consider the various relations it stands in to its organs, we find it natural to claim that the cat’s organs exist in order to sustain it; that sustaining the cat is their proper function; that sustaining the cat is their purpose; and that they exist for the sake of sustaining the cat. In so many ways, we state that the cat’s organs are teleologically dependent on the cat. The converse, however, is not the case. The organs exist for the sake of the cat, but the cat does not exist for the sake of its organs. The cat takes care of its organs, of course; and it works to keep them healthy in much the same way that the organs work to keep the cat healthy. But the cat cares for its organs as something necessary, rather than as its ultimate end. For ultimately, the cat exists in order to flourish and be happy as a whole cat. These ends are distinct, for we can imagine a cat placed on life support, whose organs are kept in perfect working order, but whose life is not particularly happy or healthy. A cat is prior to its parts, in other words, in a way that a piece of Swiss cheese is not prior to its holes, namely that it is teleologically prior to them. This is not just a fact about cats, of course, or about

28 See chapter 4, §1.

29 We will return to this thought experiment in chapter 3, §6.4-5, when we discuss whether an organism’s structure is the same thing as a spatial arrangement of its parts.
organisms in general, even. For teleology exists in many diverse sorts of phenomena, including actions--which are performed for the sake of ends, evidence--which is presented for the sake of determining the truth, beliefs--which are held for the sake of knowledge, artifacts--which are produced for the sake of achieving certain ends, and more.

Life itself is full of teleology, and this is easiest to see when attending to its self-maintaining character, and especially to the role that flourishing plays in explaining such self-maintenance. For it seems that every living thing aims to be as happy and as healthy as possible. This “aiming” need not be conscious; in fact, it usually isn’t. Trees do not consciously grow towards the sun, flowers do not consciously bloom, and animals do not consciously metabolize the food they eat. Yet blooming, growth, and metabolism are all proper functions of such beings. Trees function properly when they grow towards the sun, flowers function properly when they bloom in the right season, and animals function properly when they metabolize what they eat. To say that living things aim to flourish, then, does not mean that they consciously entertain the goal of flourishing. Rather, it means they are teleologically oriented toward it. Organisms live and breathe in order to be as well-off as possible.

In living for the sake of being as well-off as possible, there is a sense in which organisms live for the sake of achieving perfection. In aiming to flourish, organisms are teleologically oriented toward a certain ideal, and they exist for the sake of achieving it. This ideal, moreover, is an ideal of well-being: something associated with perfection and goodness. Summarily, it seems that wherever there is life, there is a teleological orientation towards perfection.
This teleological orientation of life towards perfection makes the study of teleology seem *metaphysical* in a way that mathematics, set theory, and mereology are not. Consider the question “*what is the meaning of life*?” The two most charitable readings of this often-asked question are both teleological. They are the following:

q. What are we here *for*?

r. What is the world here *for*?

The first reading, (q), is one on which people who ask what the meaning of life is are asking what they are here *for*. They want to know their *purpose* in life--what they should be doing with themselves. The first most charitable reading of the question “*what is the meaning of life*?”, then, is as a question about the purpose of human beings.

At first, it may seem that *medicine*--including psychological medicine--can answer the question of human purpose, since medicine is the science of human well-being. One might, in other words, identify human well-being with medical health. Yet such a view faces a *prima facie* difficulty: for it seems that human beings are capable of forgoing their biological and medical purposes in order to achieve *other* ends, which, even if not worth their cost in health, are still cases of fulfilling the human purpose. The lives of Mozart or Emily Dickinson spring to mind, as do others who sacrificed their physical or psychological well-being for higher pursuits. Similar cases include human beings who flourish and live a meaningful life by surgically altering their anatomy. If the human purpose were identical to medical health, it would seem that Mozart and Dickinson failed to achieve it. Yet we are inclined to say otherwise, and to invoke purposes that
transcend biology. The human good cannot be strictly identical to medical health; for it seems possible to achieve the human good ways that preclude being healthy.

In considering what the human purpose is, and what the human good is, we turn not only to medicine but also—and ultimately—to philosophy, where we ask what makes a human life worth living in the first place. The first charitable way to read the question, “what is the meaning of life?”, then, is as a distinctly philosophical question--one about the human purpose and what makes a human life worth living.

Taken as a metaphysical question, the question of human purpose is a question about the nature of an entity, or a thing that is denoted by the phrase, “the human purpose.” Taken metaphysically, the question of life’s purpose becomes a question about what kind of a thing Human Health Itself is, and how human beings can be metaphysically dependent on it without philosophical absurdity.

The second charitable reading of “what is the meaning of life?” is more metaphysical than the first. Rather than interpreting it as a question about the human purpose, (r) asks about the purpose of the whole world. In asking what the meaning of life is, one could be charitably understood as asking about the whole world and its purpose, rather than asking about the purposes of human beings within it. The other charitable reading of the question “what is the meaning of life?”, then, is as a question of the whole world’s purpose. For the question of the world’s purpose is, if nothing else, a question about what justifies it, or what makes its existence worthwhile. It is the question “what’s the point?”, but applied to everything all at once. It is a philosophical question in that it is ultimately a question of justification and value.
Taken as a metaphysical question, the question of the world’s purpose also becomes a question about the nature of an entity that is denoted by the phrase, “the meaning of life.” Taken metaphysically, the question of life’s purpose becomes a question about what kind of an entity Goodness Itself is, and how the world’s constituents are dependent on it.

Because organisms are teleologically prior to their parts, and because teleology seems to be a distinctly philosophical topic, it seems that examples of organisms demonstrate how ontology could be ambitious: by identifying metaphysical priority with teleological dependence. Such an account would not be a \textit{brute} theory of metaphysical priority, however, and it would actually be \textit{Classical Platonism}. 
6. Classical Platonism: Metaphysical Priority is Teleology

Before dying of hemlock poisoning in the *Phaedo*, Socrates claims that a correct theory of the Forms will explain *why things exist*, and that it will do so in terms of what is *best* for them.\(^{30}\) This kind of normative explanation later came to be known as final or teleological causation, and identifying metaphysical priority with *it* was what separated Plato’s followers from the rest of antiquity.\(^{31}\) They saw the world as an intricately structured *teleological hierarchy*, with the Form of the Good at the top, pure mathematical patterns immediately below it, followed by goal-directed systems which realize those patterns, and the material parts and aspects of such systems at the very bottom.\(^{32}\)

Let *Classical Platonism* be the conjunction of two claims:\(^{33}\)

s. The task of ontology is to say what the primary substances are.

and

t. Metaphysical priority is teleological dependence.

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\(^{30}\) *Phaedo* 99-101, and especially 97c-d: “If then one wished to know the cause of each thing, why it comes to be or perishes or exists, one had to find what was the best way for it to be, or be acted upon, or act.” (Tr. Grube.)

\(^{31}\) Gerson (2005), ch.1.

\(^{32}\) This is the famous Line Analogy of *Republic* 509c10-514a. See §9.

\(^{33}\) Today the word “Platonism” is usually used as a synonym for realism about transcendent universals, particularly numbers. If my account of Platonism is correct, realism about transcendent universals is *entailed* by (t) and another Platonic idea, namely that physical systems persist in order to realize certain abstract mathematical patterns.
Classical Platonists identify metaphysical priority with *functional teleology*, or the relation that things bear to their proper functions. In a Classical Platonist ontology, things ultimately exist *for the sake of* achieving certain ends; they exist *in order to* perform certain proper functions. Ends, purposes, and proper functions are therefore not only real but also real *things*--and metaphysically fundamental ones, at that. They are the Classical Platonist’s primary substances. Under Classical Platonism, the most fundamental elements of being are *proper functions or purposes*, which things exist *in order to perform*.

Metaphysical dependence, for the Classical Platonist, is the *for the sake of* relation. Paradigm cases of this relation are easy to produce: the purpose of a broom is to sweep, the purpose of the heart is to circulate blood, the purpose of my running is to get to class on time, and the purpose of a cat is to flourish in a distinctively feline sort of way. Skeptics demand more than paradigm cases, however. They want to know how teleological relations are different from causal and mereological ones, and why appeals to teleology are not simply confused appeals to other things.

To distinguish the teleological *for the sake of* relation from other relations--for instance, causal and mereological ones, it is helpful to cite examples of things that are teleologically related but not causally or mereologically related. Our examples will be *perfections*. This is not only because perfections are teleologically related to objects without being mereologically or causally related to them, but also because the Classical Platonist’s ontology, as we will see, is primarily an ontology of perfections, or *ways that things are supposed to be.*

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34 See chapter 3, §2-4.
As examples of perfection, consider the two properties of *perfect cat health* and *perfect broom-hood*. *Perfect cat health* is the property that a cat would have if, from birth onward, without interruption, it flourished in the way that cats do, but with as little pain, injury, or sickness as possible. To achieve *perfect cat health* is to be maximally happy and healthy in a distinctively feline way. To my knowledge, no cat has ever achieved *perfect cat health*, and it seems unlikely that any real cats ever would. The matter is contingent, but for the sake of illustration we’ll suppose that no cat has ever been, nor will ever be, perfectly healthy. Likewise, *perfect broom-hood* is the property that a broom would have if, from the beginning of its career, it always facilitated sweeping and always produced perfectly swept floors when correctly used. Just as in the case of *perfect cat health*, the achievement of *perfect broom-hood* is a doubtful contingency; for the sake of illustration we will suppose no broom has ever done it.

To distinguish teleological priority from causal and mereological notions, first note that individual cats neither cause nor are caused by *perfect cat health*, just as individual brooms neither cause nor are caused by *perfect broom-hood*. No cat ever achieves *perfect cat health*. Nor does *perfect cat health* cause any cats to come into being. The relationship between cats and *perfect cat health* is not causal. The same is true of brooms and *perfect broom-hood*. Brooms neither cause nor are caused by *perfect broom-hood*. Summarily, no causal relations obtain between items and their perfections.

Nor are there any mereological connections between them: *perfect cat health* is not a *spatial* part of any cat, like a whisker or a tail, nor is it a cat-part by being one of a cat’s features. Nor is there any sense in which cats are *parts of perfect cat health*. The relationship between individual cats and *perfect cat health* is not mereological, nor is that between brooms and *perfect
broom-hood. No broom is part of perfect broom-hood, nor is perfect broom-hood part of any broom.

Since neither causal nor mereological relations obtain between our examples and their perfections, the for the sake of relation, which does obtain between them, should not be confused with relations of causation or parthood.

Nor should it be confused with the modal notion of potentiality. Cats, we might suppose, have the potential to be perfectly healthy, even if none of them actually are; likewise for brooms. However, the relation of being for the sake of should not be confused with the modal relation of potentiality, for they are not the same. Cats and brooms have many potentials: cats have the potential to be covered in blue paint, and they also have the potential to drag themselves around using only their front paws. Brooms have the potential to rot, and they also have the potential to be warped and used as longbows. Yet a cat’s potential for perfect cat health and a broom’s potential for perfect broom-hood are importantly different from these other potentials. In particular, they differ with respect to their explanatory, normative, and constitutive roles.

First, a cat’s behavior and a broom’s use can both be explained by their potentials for perfection in a way that they cannot in terms of other potentials. When a cat suns itself, for instance, or eats, or pounces, we may say that it does so in order to be as healthy as possible; it is legitimate and proper to say that the purpose of a cat’s sunning is to be maximally healthy. This does not mean that the cat consciously entertains plans that culminate in health, of course, any more than a tree consciously plans to gather light by growing toward the sun. Cats do not consciously entertain the end of perfect cat health, but they have it as an end all the same, and
their behavior can be explained with a view to it in a way that it cannot be explained with a view to their potentials to be painted blue or to crawl using only forelegs.

Similarly, when a broom is used, we may say that it is used in order to sweep as well as possible, which requires utilizing the features that make it a good broom. As in the case of cats, the behavior of brooms--that is, our use of them--can be explained in light of their potential for perfection in a way that they cannot in light of their other potentials. The teleological for the sake of relation, therefore, is not just one of de re potentiality, for neither all of a cat’s potentials nor all of a broom’s play the explanatory role supplied by their perfections.

Second, appeals to perfect cat health and perfect broom-hood support normative judgments about cats in a way that appeals to other potentials do not. Cats are supposed to be as healthy as possible; the less healthy a cat is, the worse it is, and the more licensed we are to say that something is wrong with it. Likewise, brooms are supposed to play the broom-role perfectly, or as perfectly as possible; the less a broom is able to sweep, the worse of a broom it is, and the more licensed we are to describe it as malfunctioning. In addition to playing the aforementioned explanatory role, then, the notion of an end is also that of a proper standard against which achievements of it are measured.35

Finally, in addition to playing explanatory and normative roles, ends also play constitutive roles: a broom can be so bad at sweeping that it isn’t even a broom any more but just a mess of materials, just as a cat can become so sick that it ceases to be a cat and becomes a corpse. Part of what it is to be a cat is to approximate perfect cat health to a minimal degree, just

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35 Geach (1956)’s distinction between attributive and predicative adjectives is relevant here. There is a huge difference between being a bad cat and being a bad thing which also happens to be a cat. A particularly healthy cat might make a whole neighborhood sneeze with its shedding, in which case a good cat might be a bad neighbor, but for all that it would still not be a bad cat. Similarly, a good weapon can be a poor gift for an insane friend.
as part of what it is to be a broom is to approximate *perfect broom-hood* to a minimal degree. This does *not* mean that it is impossible to be a bad cat or a bad broom; it just means that being bad is really a matter of being *less good*, and being worst is a matter of being *least good*. The Platonic doctrine that badness is merely a privation of goodness is easy to see in this context, as is the identification of goodness and being, since a thing’s becoming progressively worse is accompanied by a literal disintegration.36

A thing’s end, then, stands in a constitutive relation to it, as well as in explanatory and normative relations. Even if our world requires ends to be causally or mereologically connected to their means, the *end of relation* should not be confused with relations of parthood, causality, or *de re* potentiality.

When one thing is teleologically dependent on another, then, the latter plays certain explanatory, normative, and constitutive roles. Or to put the point more formally, X is teleologically dependent on Y only if, first, appeals to Y provide a final causal explanation for X; second, that Y provides a normative standard against which the excellence of X is measured; and third, that Y provides a constitutive standard against which it is determined whether X exists.

As an example, consider again Felix and his organs. Felix provides a final causal explanation for his organs’ existence: his organs exist for the sake of maintaining his health. When we ask what Felix’ organs are *for*, in other words, we learn that they are for keeping Felix healthy and fit. Second, we it is by reference to Felix’ overall health that we measure the excellence of his organs’ performance. In order for one of Felix’ organs to be working properly, it must contribute to his health in a certain way; and to the extent that it fails, it is not a good organ.

36 Korsgaard (2009), pp. 28.
Third, Felix’ health is not only a *normative* standard against which Felix’ organs are measured. It is also a constitutive standard. In order for various bits of cat-tissue to even *count* as organs, in other words, they have to be capable of contributing to Felix’ health somehow. A lump of cat tissue that was completely incapable of performing the functions of any organ could not even be said to be an organ. At the very best, it might look like one, or might have formerly been one; but it cannot be an organ without having the capacity to contribute to Felix’ health. So in considering the way in which Felix’ organs are teleologically dependent on him, we find that their teleological dependence consists in their being related to certain *explanations* and *standards*. We will return to this topic in chapter 2, §8, where we take up the question of teleological dependence in more detail. There we will distinguish two varieties of teleological dependence, only one of which is identical to metaphysical priority. These varieties of dependence are elucidated further, moreover, in chapter 3, §1.
7. Classical Platonism and Triviality

Classical Platonism states that the task of ontology is to identify the most teleologically fundamental things. In doing so, it escapes the Triviality Argument, since no rules of logic trivially license conclusions about teleology. Existence-theoretic accounts of ontology, as we saw, lose philosophical ambition precisely because there is a well-known rule of logic—existential introduction—that allows the existence of metaphysically controversial entities to be inferred from trivially true premises. However, there is no analogous rule for teleology; there is no logical principle of “purpose introduction” or “teleos introduction” that would allow teleological primacy to be attributed on the basis of obvious truths. The Classical Platonist easily exorcises the specter of triviality.
8. Classical Platonism and Intelligibility

To avoid the Intelligibility Argument, the Classical Platonist needs to respond to two objections: first, that examples of value are just as heterogeneous as examples of priority were shown to be in §4, and second, that goodness is already studied by science, and so cannot be the subject of an ambitious philosophical research program.

It may seem that examples of value are just as heterogeneous as examples of priority were shown to be earlier. As an examples, consider how the predicate “good” can be applied to cats and brooms. What makes something a good cat is very different from what makes something a good broom. The former consists in biological properties such as health, while the latter consists in more basic structural properties, such as having a certain shape.

To answer this objection, it is sufficient to note that examples of goodness do have a certain unity that examples of priority lack: the features that make something a good cat are features that are good for the cat, just as the features that make something a good broom are features that are good for the broom.37

A good cat, for instance, is one that excels in its natural capacities. A good cat has, among other things, acute night vision. Acute night vision is one of the features whose possession makes a cat a good cat. Not only this, however: having acute night vision is also good for cats. Having acute night vision allows cats to flourish.

Likewise, a good broom is one that excels in performing its proper function. A good broom has, among other things, stiff bristles. Stiff bristles are part of what makes a broom a good broom. Not only this, however: having stiff bristles is also good for the broom. To see why, note

37 Kraut (2007).
the following: you can harm a broom by altering its bristles. Dipping the bristles in plastic laminant, for instance, is bad for the broom—just as chalk dust is bad for computers, sugar is bad for your car’s gas tank, and sunlight is bad for ale. In each case, we find that artifacts can be harmed precisely by being prevented from performing their proper functions. Indeed, it seems that being prevented from functioning just is harm to an artifact. We will return to this point shortly.

In general, there is a single relation—the good for relation—that obtains between each kind of thing and its respective virtues. Hence, it isn’t true that feline goodness and broom goodness have nothing to do with each other, as, say, parthood and the true-of relations seem to. The goods of each kind of thing are indeed different, but they are systematically related nonetheless, and in a distinctively evaluative way. The Classical Platonist therefore accepts the following thesis:

u. The features that make something a good member of its kind are features that benefit it.

If a virtue is a feature that makes something a good member of its kind, then (u) provides a necessary condition for being a virtue. Virtues, according to (u), are beneficial to their possessors, even if not all beneficial traits are virtues.

If (u) is true, there clearly cannot be a real kind for every predicate. For consider the predicate “un-benefitted self-harmer,” whose extension includes exactly those things that harm themselves without accruing any benefit, and whose best instances do this the most. If the predicate “un-benefitted self-harmer” picks out a real kind, then (u) is false; it would not be good
for a self-harmer to be a good self-harmer. Likewise, if (u) is true, then the predicate “un-benefitted self-harmer” does not pick out a natural kind, even if there happen to be some unfortunate creatures in its extension. The real kinds, on the Classical Platonist picture—the natural kinds, in other words—are the kinds whose virtues are beneficial to their instances.

A natural worry for Classical Platonists, then, is the naturalness of kinds that, in light of (u), they cannot countenance. In particular, three sorts of kinds would seem to pose problems: artificial kinds, whose instances include brooms and desks; material kinds, whose instances include water and methane; and certain biological kinds, like black widow spiders and praying mantises, whose virtuous members engage in self-destructive behavior.

First, the question of whether the Classical Platonist can countenance artificial kinds turns on whether artifacts are capable of undergoing benefit and harm, as well as whether their virtues are always beneficial to them. Both claims are controversial, but neither one is obviously false. On the contrary, our talk of artifacts frequently appeals to facts about what benefits or harms them: oil is good for bicycles, chalk dust is bad for computers, and biodiesel is good for car engines, for instance. Not only does such talk appear in ordinary, non-technical discourse, however; it also appears in the technical manuals and professional documents that detail an artifact’s proper use. The Classical Platonist assumes the legitimacy and correctness of such talk; on her view, artifacts can be harmed and benefitted. Countenancing artificial kinds while accepting (u), then, need not be absurd or even counterintuitive. On the contrary, appeals to

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38 The online help page for Mac OS X.5, for instance, includes a section entitled, “Protecting your computer from harmful applications.” Its two first sentences are particularly illustrative: “Some harmful applications exist that can cause problems for your computer. Frequently, a harmful application will try to appear as an innocent document, such as a movie or graphic file.”

39 Whether they can be harmed or benefitted independently of the existence of minds, or whether their welfare can ever be as important as the welfare of living beings, are both additional questions that will not be discussed here.
benefit and harm are ubiquitous in our talk of artifacts, both professional and quotidian.

More worrisome than artifactual kinds are ordinary physical and chemical kinds, like water and methane. The idea that something could be good or bad for methane seems wrong, as does the idea that something could be good methane or bad methane. It is tempting to conclude that (u) is trivially true of chemical kinds, in which case they pose no threat as a counterexample, but that option is not available to the Classical Platonist. For on her account, everything has a position in one, single teleological hierarchy. Since matter exists, it has to fit into the hierarchy somehow; and the most obvious way is by having a proper function. So actually, Classical Platonists are committed to there being a sense in which a bits of methane could be good methane, and also a sense in which something can be good or bad for methane. The problem of elucidating these senses is also known as the Matter Problem, whose solution is taken up in chapter 4, §4. Briefly, the solution lies in the research program of Deep Ecology, which identifies nature as being a certain kind of natural home for life, or a colossal natural habitat. For the time being, we will note that (u) cannot be trivially true of chemical kinds, in which case the Classical Platonist indeed has a problem.

Self-destructive biological kinds include the black widow spider, whose male members allow themselves to be decapitated and devoured by the females after mating. They do so, it seems, as part of their proper functioning and mode of life. Yet it would not seem to be good for a male black widow to be a good black widow. Nor is it good for a male praying mantis to be a good praying mantis. Nor, it seems, is it good for salmon to be good members of their kind, either, since their characteristic activity of spawning frequently comes at the cost of their health and life. Creatures like black widows, mantises, and salmon threaten (u) as potential
counterexamples.

In light of such examples, the Classical Platonist should remember Diotima’s speech in the Symposium, in which she characterizes reproduction--which includes not only biological reproduction but also the production of art by artists and theories by theorists--as a means for pursuing immortality.\textsuperscript{40} In contemporary terms, we would say that Diotima advocates a counterpart relation between parents and offspring. The offspring stand in for the parents, or represent them \textit{de re}.\textsuperscript{41} Crucially, they represent their parents in such a way as to enable their parents to live through them. This does not require a wild metaphysic, according to which parents are reincarnated in their offspring. It only requires that one’s well-being be tied to the well-being of one’s offspring. Reproduction, on Diotima’s account, is a way of achieving second-rate immortality, or eternal counterparthood, and it is good for the parents that reproduce for them to achieve it.

There is a sense in which reproduction can be good for a parent, even if it culminates in her death. For the Classical Platonist, this sense is true of black widows, praying mantises, and other animals who sacrifice their lives as key points in their development. It may not be true for more complicated creatures such as ourselves, however, or it may be true in a different way--say, by allowing theories and works of art to count as the offspring of theorists and artists. As a defense of (u), then, the Classical Platonist should claim that members of self-destructive biological kinds enjoy a beneficial second-rate immortality through reproduction.

The second objection is that, for any kind of thing that has a good, there is already a science that studies that kind, which is distinct from metaphysics or any branch of philosophy,

\begin{footnotesize}
\textsuperscript{40} Symposium 207c-210a.
\end{footnotesize}

\begin{footnotesize}
\textsuperscript{41} Compare with Sider (2000), pp.188-208, Johnston (2010), Chapter 5.
\end{footnotesize}
and which discovers the good of that kind of thing. By studying cat biology, goes the objection, we learn about feline health and flourishing, which is the feline good; by studying botany we learn about various ways for plants to flourish; by practicing housekeeping, we learn what makes a good broom. Goodness, goes the objection, is already studied by other disciplines, in which case ontology is no more ambitious under a Classical Platonist account than it is under a brute priority-theoretic account.

The proper response to this objection is to note the difference between identifying various features that happen to be goods, and giving a metaphysical account of them. The former task is performed at least partially by the crafts and sciences, as when veterinarians study feline health and housekeepers figure out what makes a good broom. The latter task, however, consists in giving a theory of reified values--the Good and the other Forms--and to explain how such entities are related to one another, to their instances, and to the constitution of reality as a whole. Ontology, according to the Classical Platonist, is the development of a highly specialized theory of universals, which, among other things, serve as standards of proper functioning and well-being. A full development of this theory is provided in Chapter 3, which is a technical discussion in the metaphysics of properties.
9. The Classical Platonist Picture

In his treatise *On Ends*, Cicero identifies philosophy’s most pressing task with investigating “the end, the final and ultimate aim,” where this end is something that not only “gives the standard for all principles of well-being and right conduct”, but which also “nature pursues[s]” as the thing that is “supremely desirable”:

For what problem does life offer so important as all the topics in philosophy, and especially the question raised in these volumes--what is the end, the final and ultimate aim, which gives the standard for all principles of well-being and right conduct? What does nature pursue as the thing supremely desirable, and what does she avoid as the ultimate evil?\(^{42}\)

By Cicero’s account, then the most pressing task for philosophy is to discover a *single thing*, which is simultaneously *life’s ultimate goal*, a *second-order standard of well-being*--that is, a standard against which the propriety of standards of well-being are measured--and something that *nature pursues* as the ultimate good.

Cicero’s three criteria excellently illustrate both the Classical Platonist answer to the question, “what is the meaning of life?” as well as to the question of how ontology can be an ambitious research program. For as we have seen, Classical Platonism claims that metaphysical priority is *teleological* in nature, and in so doing promises three things.

First, if Classical Platonism is true, then the task of ontology is to investigate “the final and ultimate aim,” which is the Good. Ontology, under a Classical Platonist interpretation, is ambitious by treating metaphysical questions as being questions about *value*.

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\(^{42}\) *On Ends*, I.iv-v.11-12, Tr. H. Rackham (2006).
Second, if Classical Platonism is true, then the primary substance--the Good--is what “give[s] the standard for all principles of well-being and right conduct.” For as we will see, a thing’s ability to perform its proper function affects whether it is a *good member of its kind*. A heart, for instance, cannot be a *good heart* without performing the proper function that hearts are supposed to perform; nor can a cat be a *healthy cat* without flourishing and living in the way that cats are supposed to.

Finally, the question of what nature pursues as ultimately desirable is not only one for ethics, but, if Classical Platonism is true, also one for metaphysics. For if (u) is true, then living things pursue not only what makes them function better, and which makes them excellent members of their kind; they also pursue that which is good for them. On the assumption that we all really want is that which is good for us, Classical Platonism can be summarized with Cicero’s third principle as well.

As subsequent chapters will reveal, the teleological structure of a Classical Platonist ontology is *four-tiered*, not unlike the one illustrated by the *Republic*’s Line Analogy.\(^{43}\) We may represent it as follows:

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\(^{43}\) *Republic* 509c10-514a. I will not argue here that Plato was a Classical Platonist.
Like Plato’s original Line, the above diagram is divisible into two basic sections, with the bottom two categories--Matter and Integrated Wholes--being *visible, concrete things* in space and time, and the top two categories--the Good and the other Forms (that is, proper functions)--being *invisible, intelligible, abstract things* with neither a spatial location nor a temporal extent. Since the top two sections contain the Classical Platonist’s primary substances (the Good being the only *real* primary substance). We will close this chapter with a brief discussion of the Good--i.e. Goodness Itself--and how the Good is related to various goods like health and efficient functioning.

According to the Sun Analogy, the Good makes things understandable in the way that the sun makes things visible, and the Good is a source of being in the same way that the sun is a
source of nourishment.\textsuperscript{44}

The reason why nothing can be seen without the sun is that the sun is the source of all light, and only illuminated things can be seen.\textsuperscript{45} The Good, then, must be the source of something analogous to light, the exposure to which renders something understandable. For Classical Platonists, this thing is \textit{logical or mathematical structure}: the more structured something is, the easier it is to understand, to study, and to become familiar with; the less structured something is, the more difficult it is to do such things. When a philosopher wants to solve a problem or understand a theory, she does so by exposing it to logical structure--e.g. by drawing distinctions, defining terms, using examples, constructing analogous arguments and counterexamples, and so on. For this reason, Plato argued that the Good is a unique object of a philosophical craft--dialectic--which not only facilitates the correct understanding of science but also supports the refutation of sophistic attacks on science.\textsuperscript{46} The Good, then, is a source of logical order, much like the sun is a source of light.

It would be absurd to maintain that the Good \textit{causes} logical order in the way that the sun causes light, for then the Good would have to be a \textit{body} of some kind. Instead, just as the sun is a \textit{paradigm case} of light--something that is more illuminated than anything else, which illuminates itself, and without which nothing \textit{else} could be illuminated--so should the Good be understood as a paradigm case of logical structure, self-evident, without which nothing could make any sense. A natural way to understand the Good, then, is to think of it as something like \textit{consistency} or

\textsuperscript{44} \textit{Republic} 510b-511e5. See Reeve (2003), (1995).

\textsuperscript{45} Despite the importance of the fire in the Cave allegory, the sun analogy is easiest to communicate under the supposition that the sun is the only source of light. This supposition is easily jettisoned once the analogy is grasped in its simplest form.

\textsuperscript{46} \textit{Republic} 508d-511e, 527-534d. Reeve (2003).
unity, or something without which logical order is impossible.\textsuperscript{47} The Neoplatonists, stressing this feature of the Good, called it "the One."\textsuperscript{48}

The reason why the sun is the source of nourishment is that it not only sheds light but also determines natural cycles, such as migration patterns, births, deaths, and the seasons.\textsuperscript{49} The sun, in other words, is responsible for the basic conditions that allow life to thrive. Similarly, the Good must be responsible for the basic conditions that allow things to exist. Since the Good is a paradigm case of logical structure, and a foundational principle for all other logical structures, it follows that, for the Classical Platonist, nothing can exist unless it exhibits a minimal degree of consistency and order. To say that the Good is a source of being, then does not mean anything exotic or "spooky". What it means is that, just as the necessary nutrients for growth are counterfactually dependent on the sun, so is the world’s logical order counterpossibly dependent on the Good. A world which--\textit{per absurdum}--lacked the Good would be a world without any logical order or consistency. It could not even be described as a \textit{possible} world. Classical Platonists thus have a rationalist ontology: nothing can exist without some degree of unity or structure.

One may well ask: what is so \textit{good} about being logically structured? Yet there are many ways to be good, and many ways to be structured; without further qualification, the question is under-specified. One might ask what is so good \textit{for cats} about having a certain structure, and the

\footnotesize
\textsuperscript{47} The fact is complicated in light of developments in paraconsistent logic. The Classical Platonist who does not want to be committed to classicism about logic should identify the Good with some principle of order even more general than PNC, which paraconsistent systems share with classical ones. Assuming, of course, that there is such a notion.

\textsuperscript{48} Gerson (2005), Remes (2008).

answer will appeal to what we know about cats. One might ask what is so good for brooms about having a certain structure, and the answer will appeal to what we know about brooms. In asking what is so good for things in general about having logical structure in general, the answer will appeal to what we know about things in general.

Things in general, for the Classical Platonist, are the primary substances, which, in addition to the Good, include the Forms, which are kind-specific standards against which the well-being and elegance of material particulars are measured. The question of what is so good for structures about being logically ordered sounds strange at first—for how could abstract structures be beneficiaries?—but in fact there is a simple way to understand it. If one thinks of theoretical elegance, order, and consistency as perfections, and if one thinks of them as perfections of intelligible structures generally, and not just of man-made theories, it is natural to think of various purposes as achieving a kind of perfection in nature’s order. The Forms, in other words, exist in order to be theoretically elegant, and their unique good,—which is the Good, just as a cat’s unique good is its distinctively feline mode of health—consists in achieving this aim.

Furthermore, because the Forms are changeless, it follows that structural universals are eternally—and necessarily—achieving perfection to the same degree. It is no wonder that Plato’s theory of the Forms became a piece of classical theology, treating the gods as ideally beautiful, perfect beings that structure the world, and which do so by being things that nature strives to imitate.

Returning to the issue of whether Classical Platonism affords ambition, the answer is that it in fact does. Even if cat goodness is the domain of veterinary science and broom goodness is

50 The problem of explaining how there could be processes that involve no change is one addressed by Aristotle in *Metaphysics* 9.6 with his discussion of dynamois and energeias. See Reeve (2000), ch.6.

51 Dodds (1951), pp. 283-311, and Siniosoglou (2008), ch.1, 2 and 5. See also Iamblichus, *De Mysteriis* I. 3; Julian, *Against the Galileans* 43a-52c; Proclus, *Elements of Theology*, prop. 113-166; and Sallustius, *Concerning the Gods and the Universe*. 
the domain of housekeeping, *the Good*, as well as the goodness of *things in general*, is not already the domain of any discipline. Except ontology, that is. According to Classical Platonism, ontology is the project of explaining how all things are dependent on the Good, which requires a great deal of work in the metaphysics of properties and value. The project is indeed ambitious, and proper to both philosophy and metaphysics.
2 Classical Platonism and Priority Monism

*Priority Monists* claim that whole cosmos is metaphysically prior to its parts. *Priority Pluralists* claim that the smallest parts of the cosmos are metaphysically prior to the whole. As for the various wholes that are *in* the cosmos, both Monism and Pluralism are silent. Their silence is telling, however; for there are some cases where it seems that the whole is more basic than the parts, and other cases where it seems that the parts are more basic than the whole. When we ask about wholes and parts *in general*, we find that the correct thesis is neither general Monism nor general Pluralism. The correct thesis, I argue, is *Classical Platonism*, which states that a whole is prior to its parts if and only if the whole is *teleologically* prior to its parts—i.e. when the parts have the *proper function* of being integrated into the whole. Classical Platonism accurately predicts our intuitions about the priority of wholes to parts, while adding *content* to the elusive question of priority. These facts constitute a formidable argument for Classical Platonism.

1. Heaps and Wholes

There is a philosophical tradition, arguably beginning with Aristotle, which not only distinguishes *mere heaps* from *integrated wholes*, but which also does so on the basis of metaphysical priority.¹ It says that integrated wholes are *metaphysically prior* to their parts, whereas mere heaps are not; and that the world’s most metaphysically basic *material* elements

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¹ *Topics* 150a15-20; *Physics* 185b11-15; *Metaphysics* 1023b26-36, 1024a1-10, 1041b30-1042a3. See Koslicki (2008), pp.122-164 and Reeve (2000), ch.3.
are integrated wholes. Thus Aristotle connects the question of wholes’ integration to that of priority and substance:

Again, if the part are prior to the whole, and the acute angle is part of the right angle, and the finger part of the animal, the acute angle will be prior to the right angle, and the finger to the man. But it is considered that the latter are prior; for in the formula the parts are explained from them; and the wholes are prior also in virtue of their ability to exist independently. The truth is probably that “part” has several meanings, one of which is “that which measures in respect of quantity.” However, let us dismiss this question and consider of what, in the sense of parts, substance consists.²

Here Aristotle notes that if certain parts are prior to wholes--such as an acute angle, which is part of a larger right angle; or a finger, which is part of an animal--then we will have the unacceptable result that geometric figures and animals cannot explain their parts in the ways that they are supposed to. And while there are different kinds of explanation, the one that concerns Aristotle in the Metaphysics, and which concerns us here, is that which is tied to metaphysical priority and primary substance. It is the question of when a whole is metaphysically something more than its parts. It is, in other words, the question “of what, in the sense of parts, substance consists.”

This philosophical tradition--which we will call material priority-theoretic ontology--has recently been defended by Jonathan Schaffer, who, like Aristotle, distinguishes mere heaps from integrated wholes on the basis of metaphysical priority; and who, like Aristotle, defends the view that the world’s most basic material elements are certain integrated wholes, rather than their parts. His view, in its fleshed-out form, is known as Priority Monism.³

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² Metaphysics 1034b27-1035a.

³ Schaffer (2009), (2010).
Schaffer introduces his Priority Monist view with a simple question about metaphysical priority. The question is this: between a material whole and its parts, which one is metaphysically prior to the other? Which one is more basic, metaphysically speaking? Thus Schaffer asks:

Which is prior, whole or part? Consider a circle. Imagine it divided into any two semicircular parts. Is the circle prior, with the semicircles existing in virtue of the circle? Or are the semicircles prior, with the circle existing in virtue of the semicircles?\(^4\)

Replacing the circle and semicircle with the material universe and its parts, Schaffer poses the question of Monism not in terms of circles, but in terms of the universe as a whole:

In place of the circle consider the cosmos (the ultimate concrete whole), and in place of the semicircles imagine the cosmos divided all the way down into particles (the ultimate concrete parts). Which is ultimately prior, the one whole or its ultimate parts?\(^5\)

Thus we have a debate over the metaphysical priority of the cosmos as a whole: if Monism is true, the whole cosmos is prior to its parts; but if Pluralism is true, the smallest particles are prior to the whole cosmos. The question of Monism, then, is not the question of “which is prior, whole or part?” Rather, it is which is prior, the whole cosmos or its smallest particles? The latter question is more specific than the former, and its answer settles fewer questions in priority-theoretic ontology.

Rather than asking about the material cosmos alone, one might ask about wholes and parts in general. For if indeed the whole cosmos is prior to its parts, what does this say about all the other wholes and parts? Is every whole prior to its parts? Or, if a whole is only sometimes

\(^4\) Schaffer (2010).

\(^5\) Ibid. Despite its dramatic connotations, the word “cosmos” will serve as a mere synonym for the physical universe.
prior to its parts, then when? Rather than asking about the cosmos, in other words, one might ask about the conditions for whole-to-part priority in general. When exactly, in other words, do we have an integrated whole rather than a mere heap? This is the question we will deal with in this chapter, and its answer will give us an argument for Classical Platonism.

For the purposes of our discussion, the term “mere heap” will include many things in its extension that are not literally heaps. In particular, they will include classes of entities that we will call mere aggregates and mere portions. For like heaps, mere aggregates and mere portions are not integrated wholes. They are not sharply distinguished from their environment. Rather, they are—like heaps—arbitrary portions of stuff.

Mere aggregates are arbitrary collections of concrete objects, which need not be spatially close or related in any interesting way. The whole whose parts are the Eiffel Tower and Betelgeuse, for instance, is a mere aggregate, as are all of the following: the whole whose parts are Antarctica and the planet Mars; the whole whose parts are my two thumbs and the three most threadbare rugs in Canada; the whole whose parts are a pair of plates and a certain walrus; and so on. What makes these items mere heaps in the technical sense is that they are not among the things we would classify as real objects, or as integrated wholes. On the contrary, they barely seem like objects at all, and seem much more like a philosopher’s invention.

Likewise for mere portions, or what Van Inwagen calls arbitrary undetached parts. Such entities include the middle two-thirds of a butter knife, the northernmost sixteenth of an office building, and the innumerably many overlapping portions of asphalt, which, despite being shaped exactly like Milo’s Venus, collectively make up US Highway I-5. Like mere aggregates,

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mere portions will be counted in the extension of the term “mere heap” because they are no more cases of real objects than mere aggregates are. They seem more like philosopher’s inventions than constituents of the world, and they are certainly not sharply distinguished from their environment in the way that integrated wholes are.

In addition to being distinguished by priority relations, then, mere heaps and integrated wholes are also easily distinguished by example. Piles of sand, mere aggregates, and arbitrary undetached parts of material objects are all mere heaps; while organisms, machines, crystals, and tightly-knit ecosystems are integrated wholes. In ordinary English, we speak of a whole being “over and above” its parts, as well as being “more than the sum of” them; in so doing, we distinguish integrated wholes from mere heaps. Mere heaps are things like piles of sand, the sum of the Eiffel Tower and Betelgeuse, and the middle two-thirds of a butter knife; integrated wholes are things like house cats, computers, mushrooms, and steamships. Mere heaps are just bits of stuff, arbitrarily distinguished from their environs; whereas integrated wholes are well-defined, structured objects. They are what we might call “the real objects,” as opposed to mere materials. Table 1 below lists several intuitive examples, in addition to those just described.

**Table 1. Examples of Mere Heaps and Integrated Wholes**

<table>
<thead>
<tr>
<th>Mere Heaps</th>
<th>Integrated Wholes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A pile of snow</td>
<td>An igloo</td>
</tr>
<tr>
<td>A cat carcass</td>
<td>A cat</td>
</tr>
<tr>
<td>Some scrap metal</td>
<td>A steamship</td>
</tr>
<tr>
<td>A puddle of mud</td>
<td>A tree</td>
</tr>
<tr>
<td>The sum of the Eiffel Tower and Betelgeuse</td>
<td>The Eiffel Tower</td>
</tr>
<tr>
<td>The middle two-thirds of a butter knife</td>
<td>A butter knife</td>
</tr>
</tbody>
</table>
The fact that we can distinguish mere heaps from integrated wholes by example, as well as on
the basis of metaphysical priority, then, is important to our investigation; for it allows us an
opportunity to discover just what metaphysical priority is, and with it, what the primary
substances are. In the last chapter we found that brute notions of metaphysical priority are
unintelligible, and that, while promising and provocative, a teleological analysis of priority still
lacks decisive arguments in its favor. The fact that we can distinguish mere heaps from integrated
wholes by example, however, suggests a clear method for producing such an argument. For if
mere heaps are distinguished from integrated wholes both by example and on the basis of
metaphysical priority, the fact that there are examples permits us to check an analysis of
metaphysical priority against intuitive cases. We can actually test an analysis of metaphysical
priority, in other words, by seeing how well it conforms to our judgments about the examples. So
if an analysis of priority treats organisms as mere heaps, for instance, while treating piles of sand
as integrated wholes, we are within our rights to reject it as false; for if anything is an integrated
whole, an organism is, and if anything is a mere heap, a pile of sand is. The fact that there are
intuitive examples of mere heaps and integrated wholes, then, allows us to test different accounts
of priority. For the sake of precision, we can treat such accounts as competing answers to a
question about wholes’ metaphysical priority to their parts. We will call this question the Special
Priority Question, or SPQ:

SPQ: Under which conditions, exactly, is a material whole metaphysically prior to its
parts?
The word “conditions” in SPQ should be read loosely, so as to include not only relations that might obtain among the parts but also various environments that a whole might be in. It should not be read, however, so as to allow a list of individuals—like in Table 1—to count as an answer to it. A proper answer to SPQ, in other words, must be general. For the same reason that Socrates dismisses Euthyphro’s first answer to the question of what piety is—“why, it’s what I’m doing right now!”—so should we dismiss such answers to SPQ. Rather than asking which particular wholes are prior to their parts, SPQ asks which necessary and sufficient general conditions obtain for the priority of material objects to their parts.

This chapter’s thesis is that Classical Platonism correctly answers SPQ. What distinguishes integrated wholes from mere heaps, in other words, is that the parts of an integrated whole are teleologically dependent on it. The parts of an integrated whole have the proper function of being integrated into it; and not only their well-being but also their very existence requires them to be capable of this integration. The correct answer to SPQ, in other words, is “when the parts are teleologically dependent on the whole.” To see why Classical Platonism supplies the correct answer to SPQ, however, it is illustrative to examine less successful answers first; so that by noting where they fail, we better see how the teleological answer succeeds.
2. A First Answer to SPQ: Fungibility

The first proposed answer to SPQ says that a whole is prior to its parts exactly when it can survive the replacement of one. If a whole’s parts are fungible, in other words, then there is a sense in which it something over and above them. A whole with fungible parts is not an extensional mereological sum, for instance, which is defined in terms of its parts. A whole with fungible parts is not like a mathematical set, which has its components necessarily. The Fungibility Answer to SPQ--henceforth “the Fungibility Answer”--says that a whole is prior to its parts exactly when it can survive the loss or the gain of one:

The Fungibility Answer: A material whole W is metaphysically prior to its parts, the Ps, iff def: W can survive an addition to, or subtraction from, the Ps.

Since the metaphysical priority of whole to part is, by the above definition, what distinguishes mere heaps from integrated wholes, the Fungibility Answer entails that something is an integrated whole exactly when it can survive a change in parts, and a mere heap otherwise. So according to the Fungibility Answer, something is a mere heap exactly when it cannot survive a change in parts.

If the Fungibility Answer is correct, then it should cohere with intuitive cases. It should predict, for instance, that piles of sand, mere aggregates, and arbitrary undetached portions of matter are all mere heaps; and that organisms and machines are integrated wholes. So let us ask: does the Fungibility Answer cohere with intuitive cases?
No. The problem with the Fungibility Answer is that *every* material object—even piles of sand, mere aggregates, and mere portions—can survive a change in parts. Intuitively, such things are *mere heaps*, and they are importantly distinguished from integrated wholes such as organisms and machines. If the Fungibility Answer is correct, however, the distinction between mere heaps and integrated wholes is not intuitive. It does not distinguish piles of sand from organisms, but rather counts them—and every other material object, too—as integrated wholes. If the Fungibility Answer to SPQ is correct, no material objects are mere heaps. Yet some material objects are mere heaps. So the Fungibility Answer to SPQ is not correct.

To see why the Fungibility Answer fails, it is sufficient to note that *every* material object—even piles of sand, mere aggregates, and mere portions—can survive a change in parts.

First, consider a pile of sand. A pile of sand can persist through the removal of a single grain. If we have a pile of sand, in other words, and if remove a single grain from it, this does not *destroy* the pile. The pile could be destroyed if we scattered the grains widely in every direction, perhaps, but just removing a single grain from the top of the pile will not do it. The same pile of sand can exist both before and after the removal of a single grain. Whatever *other* questions may arise about the persistence conditions of sand-piles do not concern us; it is sufficient for our purposes to note that a pile of sand can survive the removal of a single grain.

Just as piles of sand can survive changes in parts, so can mere aggregates. Consider the whole whose parts include the Eiffel Tower and the red star Betelgeuse. Call this object “Eiffelgeuse.” Because parthood is a transitive relation, Eiffelgeuse not only has the Eiffel Tower and Betelgeuse as parts; it also has the Eiffel Tower’s parts and Betelgeuse’s parts as parts, too.

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7 It does not concern us here, for instance, that if we allow heaps of sand to survive the removal of a single grain, we thereby encounter a Sorites paradox. For whatever the correct solution to the Sorites is, it had better not entail mereological essentialism.
So the various beams that compose the Eiffel Tower are each a part of Eiffelgeuse, as are the hemispheres of Betelgeuse. Eiffelgeuse has all the parts of both the Eiffel Tower and of Betelgeuse.

If Eiffelgeuse is indeed a single material object, as opposed to a mathematical set, it can survive a change in parts. To see why, it is sufficient to note that Betelgeuse and the Eiffel Tower can each survive a change in their parts. Since Betelgeuse and the Eiffel Tower are each a part of Eiffelgeuse, it follows that Eiffelgeuse has parts that can survive changes in parts. Yet parthood is transitive. To survive a change in your parts’ parts is to survive a change in your parts. So Eiffelgeuse--a mere aggregate--can survive a change in parts. Like piles of sand, then, mere aggregates can survive changes in parts.

Finally, even mere portions can survive changes in parts. Consider, for instance, the middle two-thirds of a butter knife. Call it “Middly.” Suppose that the butter knife is chipped in the middle, and that Middly consequently loses a part. Now suppose for reductio that Middly cannot survive a change in parts. If Middly cannot survive a change in parts, it would follow that the chipping of the butter knife destroys Middly. Since Middly is the middle two-thirds of the butter knife, however, it would also follow that the middle two-thirds of the butter knife is destroyed. Yet this is absurd. Chipping a butter knife does not destroy most of it. So it cannot be that Middly is destroyed by the loss of a part; it must be that Middly, an arbitrary undetached portion of a material object, can survive a change in parts instead. So arbitrary undetached portions of material objects can survive changes in parts.

Piles of sand, mere aggregates, and arbitrary undetached portions of matter can all survive changes in parts. The Fungibility Answer says that the capacity to survive a change in
parts is sufficient for being an integrated whole. So the Fungibility Answer entails that piles of sand, mere aggregates, and mere portions are all integrated wholes. Yet this is incorrect. A pile of sand is not really anything over and above its parts--not, at least, in the way that an organism seems to be. Likewise for objects like Eiffelgeuse and Middly. They do not seem to be wholes whose organization distinguishes them from their environment. On the contrary, many of Eiffelgeuse’s parts are separated by an astronomical distance! Far from being integrated wholes, Eiffelgeuse and Middly are mere heaps.

A good answer to SPQ correctly draws the intuitive distinction between mere heaps and integrated wholes. The Fungibility Answer does not correctly draw this distinction. So we should not accept the Fungibility Answer.
3. A Second Answer to SPQ: Life

While eschewing talk of metaphysical priority, Peter Van Inwagen famously defends a view of material composition according to which a group of parts compose a whole only if that whole is alive.\(^8\) Thus, on Van Inwagen’s view, the particles that we would ordinarily think of as composing a table do not actually do so. For tables are not alive, and particles can allegedly only compose things that are alive. So Van Inwagen’s view assigns a privileged place to organisms as the only existing material composites; it denies that there are such things as tables, chairs, stars, and planets, but it affirms there are such things as cats, dogs, trees, and mushrooms.\(^9\) On Van Inwagen’s view, a whole is composed of parts if and only if it is alive.

Our next answer to SPQ treats metaphysical priority in much the same way that Van Inwagen treats composition. It holds that there are nonliving composites like sand piles, but, on the basis of the fact that they are not alive, denies that they are prior to their parts. Call this the Life Answer to SPQ:

*The Life Answer: A material whole \(W\) is metaphysically prior to its parts, the \(Ps\), iff:

\[ W \text{ is alive.} \]

The Life Answer to SPQ states that a whole is metaphysically prior to its parts exactly when the whole is alive. The Life Answer holds, in other words, that all and only living wholes are integrated, and that all other material beings are mere heaps.

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8 Van Inwagen (1995). Note that Van Inwagen’s answer to the Special Composition Question, unlike the Life Answer to SPQ, requires that the whole is not only alive but also has a life, which living colonies do not. (See discussion below.)

9 This controversial feature of his view—which Van Inwagen calls “the Denial”—will not be taken up here.
Though successfully distinguishing heaps of sand, Eiffelgeuse, and Middly from integrated wholes, the Life Answer to SPQ is incorrect. It is incorrect for two simple reasons: first, that life is not sufficient for the metaphysical priority of whole to part, and second, that it is not necessary either.

The fact that life is insufficient for the metaphysical priority of whole to part can be demonstrated by considering living heaps of organisms, or living colonies with little to no organization beyond the spatial connectedness of their parts. As an example, consider garden hedges. Garden hedges begin their lives as separate plants, and grow as individual trunks from separate seeds. Each individual hedge is an integrated whole. When their branches come into contact and rub up against one another however, they merge, and multiple individual hedges become one composite hedge. The composite hedge is a single living thing. Yet it is not anything over and above its parts; for it is not an organism. The individual hedges are not organs of the composite, and they are not dependent on the composite to exist in the way that a cat’s heart is dependent on the cat. The individual hedges could grow and live perfectly well on their own, without being integrated into the composite. In these respects the individual hedges are only accidentally integrated into a composite, and in a way that makes the composite seem little more than the individuals. The composite does not seem to be metaphysically prior to its parts. Yet it is alive. So life is not sufficient for being metaphysically prior to one’s parts.

A second counterexample to the Life Answer’s sufficiency is the phenomenon of slime mold. A certain kind of slime mold, dictyostelium, spends most of its life as a heap of amoebic bacteriophages. Its cells operate autonomously, and they share no central nervous system.

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10 I am indebted to Marc Lange for helpful discussion on this point.

Though it has no central nervous system, scarcity of food will occasionally cause the slime mold’s cells to coalesce into an eyeless, brainless mass, which can move and respond to light, but which immediately loses cohesion and breaks into its constituent amoebae when food is discovered. Biologists have categorized the slime-mold as a colony of organisms rather than as a whole organism. So life does not seem sufficient to make a whole prior to its parts.

Composite hedges, slime molds, and other living colonies are indeed intricate, but their intricacy is primarily due to the intricacy of their relatively unrelated parts. Living colonies have integrated wholes as parts, but they are more like mere heaps of integrated wholes than they are like integrated wholes of integrated wholes. Composite hedges and slime-mold are not super-organisms. Nor are they organisms. They are more like mere heaps of organisms than anything, and a correct answer to SPQ should categorize them as such; yet the Life Answer categorizes them as integrated wholes. This counts as a mark against the Life Answer.

The fact that life is not necessary for being an integrated whole is much easier to demonstrate. For machines are paradigm cases of non-living integrated wholes. Cars, computers, pianos, igloos, and irrigation systems are all importantly distinguished from their environment, and distinguished on the basis of their parts’ integration. Far from being mere heaps of parts, they are not only integrated wholes but necessarily so. For a machine whose parts lay in a heap is no longer a machine in the fullest sense. Rather, such a thing would be a dismantled machine at best and broken machine at worst. Neither item is fully a machine, however; for the former is merely a set of parts that potentially constitute a machine, while the latter are merely parts that used to. To really, fully be a machine, one’s parts require some minimal degree of integration.12 Machines

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12 Consider the minimum level of integration needed for Bedau (1995)’s example of a ball-in-a-cup mechanism.
are necessarily integrated, and they are importantly distinct from mere heaps. They are prior to their parts even though they are not alive.\textsuperscript{13}

While supported by cases of organisms, cases of machines and living colonies show that the Life Answer to SPQ is inadequate. Let us turn to an answer which may \textit{sound} better at first--and indeed, which has received a respectable defense--but which ultimately fails for reasons entirely different than the Fungibility and Life answers.

\textsuperscript{13} Aristotle likens the integrated structures of machines (as well as to artifacts generally) to the integrated structures of organisms, distinguishing the two primarily by the \textit{means of their transmission}: the structures of organisms reside in the semen of the male parent, which moves so that, when it is applied to the menses of the female, the latter will be shaped by the former so as to take on the parents’ appearance. Artifacts’ structures, by contrast, reside “in the soul of the artisan,” who imposes it on matter using the motion of his limbs. Allegedly, then, the motions of the artisan’s limbs bear the same relationship the the matter of the resulting artifact as the motions of a male parent’s semen bears to the menstrual blood that will initially constitute his child. See \textit{Physics} 199a34-199b10, \textit{GA} 730b10-731a1, 731a24-731b10, 767a36-b25, \textit{Metaph.} 1032a32-b10, 1034a8-15, 1034a30-b10, 1070b30-34, 1071b26-31.
5. A Third Answer to SPQ: Emergence

The Emergence Answer to SPQ states that a whole is metaphysically prior to its parts exactly when it has emergent features; and that mere heaps are distinguished from integrated wholes on the grounds that mere heaps lack emergent features.

The Emergence Answer: A material whole W is metaphysically prior to its parts, the Ps, iff \( \text{def} \): W has emergent features.\(^{14}\)

The Emergence Answer thus defines metaphysical priority in terms of emergence. In so doing, it naturally accrues the question, “what is emergence?”

On pain of circularity, emergence cannot be defined in terms of metaphysical priority, metaphysical basicness, or any other such ontological notion. It will not do to claim that a whole is metaphysically prior to its parts exactly when it has emergent features; and that a whole has emergent features just in case it is metaphysically prior to its parts. For whether true or not, such an account cannot be informative.

Accounts of emergence usually proceed in terms of derivability, predictability, explanation, conceptual novelty, or holism, and it is seldom for any one of these notions to be taken as primitive. Consequently, philosophers have produced a multitude of accounts of emergence, which are so great in number as to warrant a book of its own.\(^{15}\) Fortunately, we need not embark on a detailed critique of every account of emergence in order to answer the question

\(^{14}\) Note Van Inwagen’s answer to the Special Composition Question, unlike the Life Answer to SPQ, requires the whole not only to be alive but also to have a life, which living colonies do not. (See discussion below.)

\(^{15}\) See Bedau and Humphreys (2008).
of whether any such account correctly distinguishes mere heaps from integrated wholes. For no matter how nuanced, accounts of emergence that proceed in terms of any of these notions will face the difficulty of saying exactly what the facts about the parts are, from which certain facts about the whole supposedly cannot be derived, predicted, explained, or captured without conceptual novelty.

The most usual way of defining emergence is in terms of derivability: a whole has an emergent property exactly when some fact about it cannot be derived from any of the facts about its parts.\footnote{EA: A material whole W is metaphysically prior to its parts, the Ps, iff some fact about W cannot be derived from any fact about the Ps.}

If we agree with EA\textsubscript{1} that emergence consists in the non-derivability of holistic facts from facts about the parts, and if, as EA\textsubscript{1} states, we take the condition of emergence as an answer to SPQ, then we find integrated wholes distinguished from mere heaps solely on the basis of whether facts about them can be derived from facts about their parts.

The problem in explaining emergence this way is that there are no ontologically neutral positions on what the facts about the parts are. Depending on which things are counted as features of the parts, different things will count as facts about the parts; and depending on what one allows to count as facts about the parts, different sorts of facts about the whole will count as emergent.

\footnote{It is this sense of "emergence," for instance, that Schaffer (2010) employs in arguing for Monsim.}
As an example, consider the fact that water is the combination of hydrogen and oxygen molecules, and that, although water is a liquid, neither hydrogen nor oxygen are liquids. The property of being liquid, therefore, is an oft-cited candidate case of emergence.\textsuperscript{17} Whether the case is genuine depends on a number of things, however, including the facts about hydrogen and oxygen. One would think that such facts are easy to discover: just ask the chemist. Yet even with an exhaustive account of hydrogen’s and oxygen’s chemical properties, there remain some purely ontological questions hydrogen and oxygen, as there would be about any parts.

Consider, for instance, whether it is a fact about hydrogen that, when combined with oxygen in certain proportions and at certain temperatures, it produces liquid water. It is certainly a fact about hydrogen in one sense, namely that the sentence “hydrogen, when combined with oxygen in certain proportions and at certain temperatures, produces liquid water” is true, and its grammatical subject refers to hydrogen. The statement is about hydrogen in the sense that hydrogen is its grammatical subject. The fact that its predicate explicitly mentions water’s liquidity, moreover, suggests that being liquid is not an emergent property of water.

The example of being liquid is not special, however; with the appropriate grammatical transformations, any fact about a whole can be treated as a fact about its parts. For any statement about a whole--say, “the whole is such-and-such,”--one can easily consider a part of the whole, P, and construct a true sentence, which has P as the grammatical subject, and whose predicate is “...composes, along with the so-and-sos, a whole that is such-and-such.” If such measures are sufficient to derive facts about a whole from facts about its parts, and if being derivable in this manner is incompatible with the whole’s having some emergent feature, then any facts about a

\textsuperscript{17} Bedau and Humphreys (2007).
whole can be derived from the facts about its parts, and no features of any whole are emergent. So presumably, there is more to a fact’s being derivable from one’s parts than grammatical subjectivity. But what?

One might distinguish the facts about hydrogen’s *intrinsic* features from the facts about its *extrinsic* or *relational* features; and state that the facts which are *really* about hydrogen are the ones concerning hydrogen’s intrinsic features. On such a proposal, it would be a fact about *hydrogen* that it produces water when combined with oxygen only if such a feature is *intrinsic* to hydrogen.

Intrinsicness, in turn, is typically defined in terms of either the capacity to differ between duplicates or else in terms of loneliness.¹⁸ Neither conception settles the ontological question about what a thing’s features *really* are, however.

Take the first conception of intrinsicness, for instance, according to which F is an intrinsic feature of X just in case every possible duplicate of X has F. Duplicates, in turn, are defined in terms of either resemblance or natural properties: either X and Y are duplicates just in case X and Y resemble exactly; or else X and Y or duplicates just in case X and Y have exactly the same natural properties. The problem with using either conception of intrinsicness to elucidate what a thing’s *basic* features, however, is that doing so presupposes either a notion of *basic resemblance* or of *naturalness*, both of whose extensions turn on the same considerations as that of what a thing’s metaphysically basic features are.

It is unclear whether two hydrogen molecules could have exactly the same *natural* properties, for instance--so that they were exact duplicates--but with only one of them producing

¹⁸ Or both. See Lewis (1981) and Lewis and Langton (1998).
liquid water when combined with the proper amounts of oxygen. For the matter would depend on whether the feature of producing liquid water when combined with oxygen is natural. If it is, then exact duplicates cannot differ with respect to it, which would make it intrinsic, and which, by EA$_1$, would imply that liquidity is not an emergent feature of water molecules. Contrarily, however, one might argue that the tendency to produce liquid water when combined with oxygen is not a natural property but rather something else, which is metaphysically dependent on more fundamental features of the world. In short, there is a purely ontological question about how to determine the ways in which duplicates differ, if the notion of duplication is to be understood in terms of sharing natural properties. This question of which properties are the natural ones, moreover, turns on the same sorts of considerations as SPQ itself.

Likewise for defining duplication in terms of resemblance. It is unclear whether two hydrogen molecules could resemble exactly, for instance--so that they were exact duplicates--but with only one of them producing liquid water when combined with the proper amounts of oxygen. For producing liquid water when combined with oxygen seems to be a respect in which the two molecules can resemble; and if it is, then exact duplicates cannot differ with respect to it. Contrarily, one might argue that the tendency to produce liquid water when combined with oxygen is not a real respect in which objects resemble; and that sharing such a trait is a mere “Cambridge resemblance.”\(^{19}\) Again we find a purely ontological question about how to determine the ways in which duplicates differ, if indeed duplication is defined in terms of resemblance; and again such a question turns on the same sorts of considerations as SPQ itself.

\(^{19}\) Shoemaker (1980).
If, moreover, we turn to the notion of *loneliness* to elucidate the question of what a thing’s basic features are, we find the same problem. Suppose that a feature F is intrinsic to a quantity of hydrogen just in case the hydrogen could be F while being the only thing in the universe. Even if correct, this definition would not settle the question of what hydrogen’s basic features are. For suppose there are such features as *the disposition to produce liquid water when combined with oxygen*. If there is such a feature, there is no reason why something could not possess it in isolation. A grain of salt in a waterless universe is still *water-soluble*. Likewise, a quantity of hydrogen in an oxygen-less universe can still have, all on its own, the feature of *being disposed to produce liquid water when combined with oxygen*. Moreover, for any whole W, which has any purportedly emergent feature F, one can always find among W’s parts—the Ps—some part X that has, all on its own, the feature of *being disposed to produce an F thing when combined with the other Ps*. So long as one is willing to believe in such things as dispositions, then, one need not acknowledge any feature as emergent in EA₁’s sense! One may dispute the ontological status of dispositions—that is, dispute whether they are really among the world’s most *basic* features—but such a dispute would appear to turn on the same notion of priority mentioned in SPQ.

To distinguish mere heaps from integrated wholes on the basis of EA₁-type emergence—that is, to distinguish them on the basis of what can be derived from facts about their parts—is to raise ontological questions about which features the parts *really* have, and what the facts about the parts *really* are. Because such questions are ontological—that is, concerned with identifying the world’s most *basic* features—our diversion to them as an answer to SPQ is hardly illuminating. If one answers SPQ by saying, “it depends on what the metaphysically primary
features of the parts are,” this fails to illuminate the notion of metaphysical priority. It would be one thing if the metaphysical priority of whole to part depended on certain physical facts, or biological facts, or ethical facts; but to say that it depends on ontological facts is just plain uninformative, even if it is true. EA₁ is not the correct answer to SPQ.

Nor can EA₁ be rehabilitated by replacing “derived from” with “predicted by observing,” or “explained by.” For the same problem arises: depending on which sorts of things one counts as features of the parts, different things will be predictable. Likewise, different things will be explainable by the parts, depending on what the parts are, as will different things be expressible with concepts that apply to them. In the context of answering SPQ, claims about emergence either presuppose or else require an answer to the question of what a part’s real features are—as opposed to features that it merely seems to have because it satisfies some predicate. Because such a question is ontological, furthermore, and concerns the question of which things are among the world’s most metaphysically basic features, the ensuing presuppositions are uninformative at best and question-begging at worst. The Emergence Answer to SPQ is not correct.
6. The Correct Answer: The Whole is Prior Just In Case it is Teleologically Prior

The Teleological Answer to SPQ states that a whole is metaphysically prior to its parts exactly when it is teleologically prior to them—i.e., when the parts not only have the proper function of being integrated into the whole, but also depend for their existence, their nature, and their well-being on performing that function. The Teleological Answer states, in other words, that all and only integrated wholes are teleologically prior to their parts.

More specifically, let us say that a whole is teleologically prior to its parts exactly when four conditions hold: first, that the whole has parts with mereologically integrative proper functions, or proper functions whose performance consists in being integrated into the whole; second, that such parts could not exist without their mereologically integrative proper functions; third, that such parts could not be the kinds of things that they are without their mereologically integrative proper functions; and finally, that the well-being of such parts is identical to the excellence with which they perform their mereologically integrative proper functions. So formally, we may state the Teleological Answer to SPQ as follows:

**The Teleological Answer:** A material whole \( W \) is metaphysically prior to its parts, the Ps, iff (\( \text{def} \)):

(i) some of the Ps have a proper function \( F \), which is performed by of being part of \( W \);
(ii) the Ps that have \( F \) cannot exist without their ability to perform \( F \);
(iii) the Ps that have \( F \) cannot be the kinds of things that they are without their ability to perform \( F \);
(iv) the well-being of Ps that have \( F \) is identical to the excellence with which they can perform \( F \).
First, and most importantly, the Teleological Answer gets the right result with all the intuitive cases. Consider first the case of an organism—a house cat, say. Felix the house cat’s parts are his organs, and those organs have the proper function of supporting Felix in various ways. Felix’ heart sustains him by pumping his blood, and in order to sustain Felix in this manner, the heart has to be an integrated part of him. The proper function of Felix’ heart, then, is performed by being part of Felix. Furthermore, Felix’ heart is not special in this respect; the same is true of all his organs. His kidneys perform their proper function by being part of Felix, as do his eyes, brain, skin, and so on. Condition (i) is true of an organism and its parts.

Not only must Felix’ organs be parts of Felix to perform their proper functions, however; they also must be capable of performing their proper functions to exist. If we remove one of Felix’ organs, for instance, and damage it so that it cannot ever perform its proper function again, we will have destroyed it. A heart that is removed, for instance, might still be a heart for a while, but it could not remain a heart for long without medical technology. For if the heart is left out for a few hours, so that its tissue dies and it can no longer be rehabilitated as a working blood-pump, we should say that the heart has been destroyed. It is no longer a heart, but an ex-heart. It is a dead heart, which is a heart in the same way that a counterfeit passport is a passport—namely, by not being one. The same goes, moreover, for Felix’ other organs. His kidneys, eyes, brain, and skin only exist to the extent that they are capable of performing their proper function. Their capacity to perform their proper function is essential to them, in other words. They need to be able to perform their proper function if they are to exist at all. Like (i), (ii) is also true of organisms and organs.

20 Or some other cat. See §8.

21 Compare with Aristotle’s remarks about severed limbs from Politics 1253a19-30.
Just as an organism’s parts depend for their *existence* on being able to function properly, so do they depend for their *nature* on their proper functions, too. What makes a certain lump of tissue a *heart*, in other words—as opposed to a kidney or some skin—is its proper function. The heart is a *heart* because it has the proper function of pumping blood; likewise for the kidney, the eyes, the brain, the skin, and all of Felix’ other organs. Organs get their nature from their proper functions; (iii) is true of organisms and their organs.

Finally, the health and well-being of a biological organ is identical to the excellence with which it performs its mereologically integrative proper function. A healthy heart, for instance, is just one that performs the heart-function well. Indeed, to perform the heart-function well *just is* to be a healthy heart. Hearts do not have their jobs contingently, and they do not yearn for a vacation or to live a little for themselves. Like other organs, their well-being is exhausted by how well they perform their mereologically integrative functions. On the Teleological Answer to SPQ, then, organisms are integrated wholes.

Piles of sand, Eiffelgeuse, and Middly, however, have no parts with mereologically integrative proper functions. For neither a pile of sand nor Middly has any parts with proper functions, mereologically integrative or otherwise. Eiffelgeuse, however, has a *part*—the Eiffel Tower—whose parts have mereologically integrative proper functions; but such functions are related only to their integration into the Eiffel Tower. The Eiffel Tower’s parts have the proper function of being integrated into the Eiffel Tower, in other words, but not of being integrated into Eiffelgeuse. On the Teleological Answer to SPQ, piles of sand, Eiffelgeuse, and Middly all come out as being mere heaps.
The Teleological Answer corrects for the shortcomings of the Life Answer, too. For the Life Answer falsely implied both that living colonies are prior to their members and that complicated machines are nothing more than their parts. Rather than implying such things, the Teleological Answer corrects for them both.

First, consider living colonies, such as garden hedges. As we noted, the constituent individuals that make up a composite hedge do not need to constitute the composite in order to exist. On the contrary, the individual hedges exist before they are integrated into a composite, and they need not be integrated into a composite in order to be hedges, or to flourish and live well. Individual hedges do have a mereologically integrative proper function, though, since they sustain the composites of which they are parts. Yet such functions are not essential to them, nor do they determine the individual hedges’ natures or standards of well-being. On the Teleological Account, living colonies are more like mere heaps than they are like integrated wholes.

Second, consider complicated machines and their parts. Consider again my car and its ignition lock, for instance. My car’s ignition lock has the proper function of helping the car run, as do my car’s other parts. Specifically, the ignition lock helps the car run by allowing its engine to be started with a key, and in order to help the car run like this, the ignition lock has to be integrated into the car. The ignition lock must be part of the car to perform its proper function. Furthermore, the ignition lock is not special in this respect; the same is true of all the car’s parts, from engine valves to windshield wipers. Condition (i) is true of machines and machine parts.

Not only do my car’s parts perform their proper function by being part of the car, however; like organs of an organism, they also must be capable of performing their proper function to exist. Again, if we remove my car’s ignition lock, for instance, and damage it beyond
repair so that it cannot perform its proper function, we will have destroyed it. It would be a
broken lock, which is a lock in the same way that a dead heart is a heart. The same goes,
moreover, for my car’s other parts. My car’s engine valves, steering wheel, tires, and ignition
lock only exist to the extent that they are capable of performing their mereologically integrative
proper functions. Like (i), (ii) is also true of machines and machine parts.

Just as a machine’s parts depend for their existence on being able to function properly, so
do they depend for their nature on their proper functions, too. What makes a certain lump of
metal an ignition lock, in other words, is its proper function. The ignition lock is a lock because it
has the proper function of facilitating key-triggered engine ignition; likewise for the engine
valves, the tires, and the car’s other parts. Machine parts depend not only for their existence but
also for their nature on the capacity to perform their proper functions; (iii) is true of machines,
too.

Finally, the well-being of a machine’s part is identical to the excellence with which it
performs its mereologically integrative proper functions. For as we noted in chapter 1, §8, it is
not necessary for something to be alive in order for it to be benefitted or harmed; and the things
that appear to be good for non-living things are what facilitate their proper functioning. Since the
only way for such things to be harmed is for them to be prevented from functioning properly,
however, and since the only way for such things to be benefitted is for their proper functioning to
be facilitated, it follows that there is nothing more to their benefit than their proper functioning.
Like organs, the parts of a machine are well-off exactly to the degree that they perform their
functions well. Their excellence in proper functioning is their well-being. On the Teleological
Answer to SPQ, then, machines are also integrated wholes.
The Teleological Answer fares better than the Life Answer, then, for it confirms that machines can be prior to their parts even when living colonies are not.

In addition to getting the right result in intuitive cases, and to avoiding its competitors’ shortcomings, however, the Teleological Answer also predicts that cases of cities and ecosystems will be both philosophically controversial and difficult, with intuitions supporting both the priority of whole to part and the priority of part to whole; and indeed, such cases are philosophically controversial and difficult, with intuitions lying on both sides. So in addition to tracking our intuitions in clearer cases, such as heaps and organisms, the Teleological Answer also tracks them in more difficult cases. This is a further consideration in its favor.

In the case of a city, for instance, one can easily find intuitions to the effect that a city is nothing more than a collection of citizens, working together; and that the city exists merely to facilitate the needs and well-being of its individual citizens. Such intuitions support not only the priority of civic parts, however; they also buttress a politically liberal view of the state, which puts the well-being of citizens before the state’s well-being, which emphasizes the importance of individuality and individual rights; and which, while intuitive and laudable, is nonetheless opposed by an alternative philosophical tradition.

The alternative, which goes back at least to Plato and Aristotle, and whose contemporary political influence may be traced to Hegel, holds that cities and states are colossal agents, which can flourish or suffer, and whose flourishing and suffering is more important than the flourishing and suffering of its civic parts. Though loathsome to minds that cherish the rights of individual citizens, this opposite view of the state has intuitive support, too. If we consider, for instance, the

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22 Consider also the 2010 US Supreme Court ruling that publicly chartered corporations are single persons with legal rights to free speech.
ease with which individuals commit suicide when separated from their community, or how they feel that they have nothing to live for when they are jobless and ignored, it becomes more intuitive to see citizens as serving a mereologically integrative proper function that is essential to them. Yet we tend to think that there is more to a citizen’s well-being than her civic performance, and we tend to think that citizens can also change their various civic functions. Both facts tell against cities being integrated wholes. When considering the priority of cities to citizens, there are intuitions on both sides, as well as philosophical controversy.

As the Teleological Answer predicts, these intuitions on both sides are teleological. On one hand, to judge that citizens are prior to cities is to think that the city is merely there for the sake of benefitting the citizens. One attends, in other words, to the idea that cities are made in order to benefit citizens, and not the other way around. So in judging that citizens are prior to their cities, one thereby judges them to be teleologically prior.

In judging that cities are prior to citizens, however, one likens a city to an organism, which can suffer or do well, whose organs are different civic administrations, whose individual cells are citizens, and whose well-being is supported by administrations and citizens in the same way that organisms are supported by their organs and cells. On such a view, a city is like an organism, and as in the case of organisms, the parts exist merely for the sake of the whole. The intuitions backing both sides of the debate over cities’ priority to citizens, then, are teleological. Again, this confirms the Teleological Answer to SPQ.

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24 A similar controversy is present in cases of ecosystems, with intuitions lining up in much the same way.
7. Possible Counterexamples to the Teleological Answer

The Teleological Answer to SPQ is faced with three sorts of counterexamples to its necessity. Against the necessity of the Teleological Answer, one might cite the following: first, the priority of geometric figures to their irregularly-shaped undetached portions; second, the priority of Moorean organic unities--such as the unity of a wrong-doing and its punishment--to their parts; and third, the priority of natural, non-living composites to their parts, such as diamonds, stars, and methane molecules. Let us examine each in turn.

The first potential counterexample to the Teleological Answer’s necessity is that of a geometric figure and an unarticulated--i.e. un-drawn--portion of it. Schaffer introduces the case in his “Monism”: “But also consider some gerrymandered division of the circle. Here it seems that the circle is prior--the gerrymander is just an arbitrary partition on the circle.” A geometric circle, then, seems prior to arbitrary partitions made within it. Yet geometric circles are not teleologically prior to their gerrymandered divisions; their divisions have no purpose, and they do not exist in order to support the well-being of the circle. So the case of the geometric circle would appear to be a counterexample to the Teleological Answer’s necessity: the arbitrary partitions made within the circle do not exist for the sake of the circle, but they appear posterior to it all the same.

The first thing to note about this example is that the arbitrariness of the circle’s division is doing all the work in making the circle seem metaphysically prior. For by Schaffer’s own admission, a circle’s division into non-arbitrary parts--such as two semi-circles--is not a clear case where the whole is obviously prior to the parts, and so not a case that can be used as a

counterexample to proposed answers to SPQ. The arbitrariness of the circle’s sub-portion is essential, then, to such portions’ being effective counterexamples.

What does this arbitrariness really consist in, though? In saying that a portion of something is arbitrary, we usually mean that its distinction from other portions is artificial and unprincipled. In this sense, and in Schaffer’s counter-example, an arbitrary portion of something cannot “stand out” all on its own. It has to be distinguished without appealing to any natural markers. It is something that one does not naturally notice, but to which one’s attention must be deliberately and selectively directed.

What this means is that an arbitrary portion of a geometric figure like a circle would usually be detected after one detects the figure itself, and this is certainly true of the example of the circle. There is a relation of temporal priority, in other words, between the detection of the circle and the detection of its gerrymandered divisions. In the case of the geometric circle, the example works only by first imagining the whole circle, and then only afterwards imagining its gerrymandered divisions. When one imagines the circle first and the gerrymandered divisions afterward, it seems that the circle is prior to the divisions.

The example can be made to work the other way, however. To see how, just consider any random, irregular polygon. Suppose that it is drawn on a sheet of paper. Now imagine someone inscribing the polygon in a circle, but not by just drawing a circle around the polygon. Instead, imagine the circle being constructed out of other irregular polygons, which fit together neatly with the original polygon to form it. Finally, once they are fitted together, imagine that someone erases the lines dividing them, so we end up with a plain, geometric circle. In such a case, when the various polygons have been fitted together and their divisions erased, does it really seem after
the fact that the circle is prior to its constituent polygons? No. It seems that the polygons are prior, since in our story they existed before the circle, and the circle was built out of them. The fact that the gerrymandered divisions came first, in other words, seems to make all the difference.

A circle can seem prior to its gerrymandered divisions, then, and the divisions can also seem prior to the circle. Are either of these seemings supported by a distinctly philosophical or metaphysical notion of priority, though? It seems not. Rather, our intuitions seem tied to the mere temporal ordering in which the circle and division are presented. If the whole is drawn first, it seems prior to the parts; but if the parts are drawn first, they seem prior to the whole. The intuition that the geometric circle is prior to its gerrymandered divisions is not a counterexample to the Teleological Answer, then. For the geometric circle is not prior to its parts in any metaphysical sense, but only in a temporal sense.

The second potential counterexample to the Teleological Answer’s necessity comes from the end of G.E. Moore’s *Principia Ethica*, in which he discusses the goodness of punishing wrong-doing, even when both the wrong-doing and the punishment lack any goodness on their own:
Where evils do exist, as in this world they do, the fact that they are known and properly appreciated, constitutes a state of things having greater value as a whole even than the same appreciation of purely imaginary evils. This state of things, it has been said, is never positively good on the whole; but where the evil, which reduces its total value to a negative quantity, already unavoidably exists, to obtain the intrinsic value which belongs to it as a whole will obviously produce a better state of things than had the evil existed by itself, quite apart from the good element in it which is identical to the appreciation of imaginary evils, and from any ulterior consequences which its existence may bring about.\textsuperscript{26}

According to Moore, the proper response to real wrong-doing “constitutes a state of things having greater value as a whole” than either the response or the wrong-doing all on their own. Neither the wrong-doing nor its punishment is particularly good on its own, then, but their unity is better than their combined individual values. So here it seems that we have a whole which is greater than the sum of its parts. It is not a “mere heap” of events, or “one darn thing after another,” as we might say. On the contrary, the parts are integrated so as to produce something that is better overall than the combined worth of its parts.

Yet it does not seem at first like the punishment of a wrong-doing is teleologically prior to both the punishment and to the wrong-doing. It is natural to say that the punishment is inflicted for the sake of punishing wrong-doing, of course, but it seems ridiculous to think that the wrong-doing is always committed for the sake of being punished! At most, only one of the parts of Moore’s example seems teleologically dependent on the whole, even though both are supposed to be metaphysically dependent on it. Thus, Moore’s case appears to be a counterexample to the Teleological Answer’s necessity.

To see why Moore’s case is not a genuine counterexample to the Teleological Answer, it is sufficient to consider the teleological features of both punishment \textit{and} wrong-doing. For if we

\textsuperscript{26} \textit{Principia Ethica} (1903), §133.
are already inclined to see the world through a teleological lens, it is not far-fetched to think of the unity of a wrong-doing and its punishment as *like that of a broken limb and a crutch, which work together to facilitate correct behavior.*

If we imagine someone with a broken limb, whose broken limb prevents her from moving properly, it is legitimate to describe the *improper* movement of her broken limb as being a *deficient version* of normal limb movement. It is legitimate, in other words, to say that the movement of the broken limb is not only bad *for* the limb’s possessor, but also bad in the *attributive* sense.²⁷ Not only would it be a bad thing that is also movement, in other words; it would also be *bad movement.* That is, the motion of the broken limb would be a bad member of its kind.

The *deficiency* of a broken limb’s motion, moreover, reveals its teleological dependence on something else, namely *moving well.* The fact that the limb’s motion is deficient, in other words, reveals that it is supposed to be better. The limb not only moves deficiently, then, but also moves in order to move well. Moving well is the limb’s proper function. Since the limb does not move well, it does not perform its proper function; yet the limb has the proper function of moving well all the same.

Similarly, if we liken a wrong-doer to someone suffering from an injury, whose injury prevents her from behaving lawfully, we may describe her lawless behavior as being a deficient version of normal, lawful behavior. The behavior of the wrong-doer is not only bad *for* the wrong-doer and her victims, but also bad in the attributive sense. Not only would it be a bad

²⁷ Geach (1956).
thing that is also behavior, in other words; it would also be literally bad behavior. That is, the behavior of a person would be a bad member of its kind.

Moreover, just as a broken limb’s motion is teleologically dependent on moving well, so is wrong-doer behavior teleologically dependent on proper behavior. A properly functioning person, we should say, behaves lawfully; and their behavior exhibits proper functioning to the extent that it is (among other things) lawful. Wrong-Doer behavior, then, is behavior which, like the motion of a broken limb, fails to perform its proper function. Just as a limb moves in order to move well, so does one behave in order to behave correctly. Just as the deficient, improper motion of a broken limb exists for the sake of being a healthy limb’s healthy motion, so would the deficient, lawless behavior of a wrong-doer exist for the sake of being the lawful behavior of an uninjured person.28

Finally, when we consider the role that a crutch plays in the movement of a broken limb, we find that its purpose is to facilitate proper motion, so that the crutch and the limb end up working together to produce better motion. Improving the motion of the crutched broken limb, then, is something for the sake of which both the broken limb moves and the crutch exists. The broken limb and the crutch are therefore both teleologically dependent on their composite.

Likewise, when we consider the role that punishment plays as a response to wrong-doing, it is natural to think that its purpose is to correct wrong-doer behavior while facilitating lawful

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28 The teleological dependence of wrong-doer behavior on lawful behavior does not require wrong-doers to consciously try to behave lawfully. This is easiest to see when we treat the conscious trying as part of the behavior.
behavior. It stands, in other words, to wrong-doer behavior as a crutch stands to a broken limb’s deficient motion, namely that it exists in order to correct the deficiency. The improved behavior of punished wrong-doer, then, is something for the sake of which both the wrong-doer behaves and the punishment is meted out. Just as with the broken limb and the crutch, so are both the parts of Moore’s example teleologically dependent on their composite.

So just as a broken limb and its crutch work together in order to facilitate proper motion, so do wrong-doer behavior and punishment work together in order to facilitate proper behavior. In each case, both parts are teleologically dependent on the whole. For this reason, Moore’s case is no counterexample to SPQ’s Teleological Answer.

This is revealed when we apply conditions (i)-(iv) of the Teleological Answer to Moore’s case. Our examination has already revealed that (i) is true of Moore’s case, since a wrong-doing has the proper function of being proper legal behavior, and since, given that it is a wrong-doing, the achievement of its proper function can only occur through integration into a corrective whole. Likewise, punishment’s corrective nature gives it a mereologically integrative proper function, too, which it cannot perform without being integrated into a whole that includes a wrong-doing.

Not only is (i) true of Moore’s case, however, but so are (ii) and (iii), since it is essential to a wrong-doing that it was committed by an agent who could have behaved properly. Indeed, one of the key features that distinguishes a real wrong-doing from a mishap or an unfortunate accident is that wrong-doings are committed with a certain degree of responsibility. Specifically,

29 The analogy can still hold if retributivism is true, though it does so more tenuously. The retributivist can treat retributively punished wrong-doer behavior as being like a the motion of a crutched broken limb, and say that wrong-doer behavior is a deficient member of its kind by being unpunished. This appears to require wrong-doer behavior to be a different natural kind than lawful behavior, however, since the latter is not deficient by going unpunished.
wrong-doings are committed by agents that could have done otherwise and could have done better. Without these potentials, there is no wrong-doing, and without these potentials there is also no possibility of the wrong-doing’s performing its proper function. For wrong-doing to exist at all, and for it to even count as wrong-doing, it must at least be possible for the wrong-doer to perform what was in fact her behavior’s proper function—namely, behaving legally and properly.

Likewise for punishment. In order for something to count as punishment, it has to at least possess the potential to correct for wrong-doer behavior. A stimulus that could never affect wrong-doer behavior under any circumstance could hardly be called a punishment in any real sense; at the very best it would be something that one might mistreat as punishment, or mis-identify as punishment. So (ii) and (iii) are true of Moore’s case.

Finally, (iv) is true of Moore’s case, too, since a wrong-doer’s behavior is good and healthy to the extent that it is being treated; and a punishment is good and well-functioning to the extent that it effectively treats wrong-doer behavior. Again, Moore’s case is no counterexample to the Teleological Answer to SPQ.

The last potential counterexample to the Teleological Answer’s necessity is the priority of natural, non-living composites to their parts, where such composites include diamonds, stars, planets, galaxies, and methane molecules. Such things are not mere aggregates or mere portions, and they seem to be more integrated than a mere pile of sand. Yet their parts do not appear to exist for the sake of the whole. Neither a planet’s unarticulated hemispheres nor a diamond’s constituent molecules exist for the sake of the planet or the diamond; nor do the atoms in a methane molecule exist for the sake of the molecule. So it would appear that diamonds, stars, and molecules are counterexamples to the teleological answer’s necessity.
To answer these potential counterexamples, the Classical Platonist must solve the Matter Problem, which is taken up in chapter 4, §4-5. Briefly, the solution is to include ecosystems among the various integrated wholes, and to count the entire universe as a colossal ecosystem. Its non-living parts, moreover--including stars, diamonds, and methane molecules--exist for the sake of supporting life and facilitating life’s flourishing. This requires a commitment to what has come to be known as “Deep Ecology.” As we will see, then, Classical Platonism responds to cases of stars and diamonds by finding ecosystemic teleology for them.
8. Teleological Dependence and Contingency

To say that some parts are teleologically dependent on their whole is to say that their proper function is to sustain and support the whole. As an example, consider a cat--Felix--and his organs. Felix’ organs have the proper function of sustaining and supporting Felix.

Yet even while satisfying the description “sustaining Felix,” there are ways for Felix’ organs to fail to perform their proper functions. First, there are possible circumstances in which Felix’ parts sustain Felix in an unnatural or unhealthy way; and second, there are possible circumstances in which Felix’ parts perform their proper function after they are transplanted into other cats. This second reason, moreover, raises the question of whether Classical Platonism has to admit contingent relations of metaphysical dependence, or whether relations of metaphysical dependence must always be necessary. First, however, the topic of unnatural sustenance.

For Felix’ parts to perform their proper function, it is not enough that they sustain Felix somehow or other; rather, they each have specific tasks that they are supposed to perform. If Felix’ heart miraculously began to filter his blood instead of pumping it, while his kidneys simultaneously began to pump his blood rather than filter it, there would be a sense in which Felix’ parts sustain him. Yet his parts would not be functioning properly. In order for a whole’s parts to teleologically depend on it, then, it is not enough that they sustain the whole somehow or other. Rather, they must have specialized tasks or roles that they play in sustaining the whole.

We will return to these roles--reified--in the next chapter, when we introduce the Classical Platonist’s theory of the Forms.

Second, and more importantly, however, is the fact that Felix’ parts are only contingently a part of him; which raises the question of how Felix’ parts can actually be metaphysically
dependent on Felix. For if the Teleological Answer is correct, Felix’ parts are metaphysically dependent on Felix. Yet they do not seem particularly dependent on Felix; for when it comes to specifying what his organs’ existence, nature, and well-being is dependent on, we find that it is not Felix but his organs’ *proper functions* that do all the work. It is Felix’ heart’s *proper function*, in other words, that determines its standards of persistence and well-being. Felix appears to have little to do with it. Likewise, it is Felix’ kidneys proper function that determines their standards of persistence and well-being, too, with Felix appearing to play little or no role. The work of metaphysical dependence, it seems, is being done by proper functions rather than wholes. So in what sense are an integrated whole’s parts *metaphysically prior* to it?

The problem is exacerbated by the fact that Felix has his parts contingently. They can exist without him, and he without them. Felix can die, and his parts can continue to function properly in *other* cats; or Felix can continue living, and be the recipient of organ transplants rather than a donor. Thus, we have a philosophical puzzle: how can Felix’ organs be metaphysically dependent on him if they can exist and be well-off without him, too?

The solution to this puzzle is to distinguish two different sorts of teleological dependence, which so far have been given similar treatments: one that is defined in terms of *beneficiaries* and one that is defined in terms of *processes*. On a beneficiary-based reading, a thing’s *purpose* or *function* is couched in terms of what it benefits, while on a process-based reading, it is couched in terms of the activities that do the benefitting. When speaking of Felix’ organs, for instance, we may say that his organs exist *for his sake*, since he is the one who benefits from their functioning,

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30 Johnson (2008), ch.2.
and we may also say that his organs are for sustaining him, since that is the activity which results in such benefits. The former reading is a beneficiary-based one; the latter is process-based.

Depending on our reading of the phrase, “the purpose of Felix’ organs,” we will get conflicting answers to the question of what Felix’ parts are really metaphysically dependent on. If we think of Felix as the purpose of the organs, and treat their teleological dependence on Felix as metaphysical, then metaphysical priority will turn out to be the same relation as beneficiary-based teleological dependence. If, however, we think of sustaining Felix as the organs’ purpose, then it would seem that Felix’ organs are not metaphysically dependent on Felix as much as they are dependent on their own proper functions; in which case metaphysical priority will turn out to be process-based teleological dependence.

As mentioned above, we find that the relation of process-based teleological dependence is the relation that does all the metaphysical “heavy lifting” when discussing the priority of parts and wholes. For it is the parts’ proper functions that determine their persistence conditions, their conditions of flourishing, their natural kind, and their very existence. When considering what makes something a heart, or what makes hearts incapable of surviving certain conditions, or what makes it true that something is good for a heart, we find the answer lying not with the organism that possesses it; but rather with the proper function of the organ itself, on which the organ’s existence and nature seems throughly dependent.

Thus, Classical Platonism defines metaphysical priority as process-based teleological dependence, which is the kind of dependence that Felix’ organs exhibit with respect to their mereologically integrative proper functions. Strictly speaking, then, Felix’ organs are metaphysically dependent on their proper functions, rather than on Felix.
Moreover, there is an important and logically necessary *tie* between the *process-based* teleological dependence of Felix’ organs on their purposes and the *beneficiary-based* teleological dependence of Felix’ organs on Felix. The tie is an explanatory one: an organ has its beneficiary-based functions *because* it has its process-based ones. The reason why Felix’ heart is *for Felix*, in other words, is that Felix’ heart has a certain proper function, the performance of which requires the benefit of creatures like Felix. Likewise, the reason why my car’s ignition lock is *for the car* is that it has a certain proper function, too, whose performance also requires its integration into something like my car. Relations of beneficiary-based teleological dependence are explained in terms of relations of process-based teleological dependence, then. This is another mark in favor of identifying metaphysical priority with process-based teleological dependence.

The identification of metaphysical priority with process-based teleological dependence does not falsify the Teleological Answer to SPQ, however; for the relations of beneficiary-based teleological dependence are the ones that make integrated wholes seem prior to their parts, and they are necessarily connected to relations of metaphysical priority. They stand in relations of beneficiary-based teleological dependence on their wholes, in other words, precisely *because* of the relations of metaphysical priority that their proper functions bear to them.

While not *falsifying* the Teleological Answer to SPQ, then, the problem of contingency requires its qualification: integrated wholes are *not* just wholes that are metaphysically prior to their parts. Rather, they are wholes whose parts are teleologically dependent on them in a beneficiary-based way, and whose parts are teleologically dependent on them in a beneficiary-based way *because* their parts are metaphysically dependent on certain proper functions:
The Qualified Teleological Answer: A material whole $W$ is integrated just in case its parts, the $P$s, are metaphysically dependent on a mereologically integrative proper function; where the $P$s are metaphysically dependent on a mereologically integrative proper function iff def: (i) some of the $P$s have a proper function $F$, which is performed by being part of something of the same natural kind as $W$; (ii) the $P$s that have $F$ cannot exist without their ability to perform $F$; (iii) the $P$s that have $F$ cannot be the kinds of things that they are without their ability to perform $F$; and (iv) the well-being of $P$s that have $F$ is identical to the excellence with which they can perform $F$.

The correct answer to SPQ, then, requires us to recognize that there are in fact two sorts of teleological dependence, which are necessarily connected. One of them is the relation borne by various parts to their integrated whole, while the other is metaphysical priority, which things bear to their proper functions. The first relation is not the very same as metaphysical dependence, therefore, but it obtains because of metaphysical dependence.
9. Conclusion: The Argument for Classical Platonism

Because a whole seems metaphysically prior to its parts exactly when it is teleologically prior to them; and because metaphysical priority is itself an elusive concept in need of definition; one should conclude from our examination of SPQ that metaphysical priority just is a kind of teleological dependence. More specifically, one might conclude that the teleological dependence between things and their proper functions, which explains the difference between mere heaps and integrated wholes, is the sake relation as metaphysical priority.

Yet such a conclusion would be an acceptance of Classical Platonism.

This conclusion is strengthened, moreover, once we notice that integrated wholes also have proper functions, and that they are dependent on their proper functions in the same way that their parts are dependent on certain mereologically integrative proper functions. An organism like Felix, for instance, has a certain standard of health as his proper function; which not only determines which things are good for him and what he can survive, but which also makes him the kind of thing that he is, which is a cat. If Felix could not be treated with feline medicine, then he would not be a cat but something else. Likewise, a broom or a car have proper functions--namely sweeping and driving--and their having these proper functions determines not only what is good or bad for them, but also what they can survive, and indeed what kinds of things that they are. Once we notice the explanatory roles that functions play in the ontology of material objects generally, in other words--as opposed to focusing on the explanatory roles that link parts to integrated wholes--we find the same metaphysical issues being decided by proper functions, and in exactly the same way that moved us to conclude that the proper parts of integrated wholes are metaphysically dependent on their proper functions. Thus, we are moved to Classical Platonism.
Classical Platonism is that it provides a systematic answer to SPQ, answering not only the question of when a whole is metaphysically prior to its parts, but also stating why. On the Classical Platonist picture, an integrated whole is metaphysically more than its parts by being teleologically prior to them in a beneficiary-based sense; and such teleological dependence is explained, moreover, by process-based teleological dependence. The ontological distinction between mere heaps and integrated wholes, in other words, which is supposed to be due to a relation that is identical to metaphysical priority, is in fact due to relations of process-based teleological dependence. So process-based teleological dependence is metaphysical priority; Classical Platonism is true.

Classical Platonism does not deductively follow from the Teleological Answer to SPQ, then, but it might be said to abductively follow, or to follow as the best sort of explanation for why material wholes only seem to be integrated when they are teleologically prior to them. Whether it actually counts as the best explanation for the Teleological Answer’s truth will depend on Classical Platonism’s tenability. What exactly are Classical Platonism’s posits— the Forms— and what philosophical work can they do without running us into absurdity? These questions will be the focus of our next chapter.
3  A Classical Platonist Theory of the Forms

The notion of a Platonic Form is underwritten by five other technical ideas, namely that *having* a Form is different from *instantiating* one; that things can have *more than one* Form; that each thing has exactly one *primary* Form; that Forms are *determinable types of processes*; and that there are *constitutive means* to instantiating a Form. This chapter will elucidate these five technicalities. In so doing, we will generate a comprehensive metaphysics of both proper functions and of properties.

1. Two Notions of Purpose

At the outset of any Platonic metaphysics, it is necessary to distinguish two ways of reading teleological idioms like “for the sake of”: one in terms of *beneficiaries* and one in terms of *processes*.¹ On a beneficiary-based reading, a thing’s purpose or function is couched in terms of what it benefits, while on a process-based reading, it is couched in terms of the activities that do the benefitting. When speaking of brooms, for instance, we may say that brooms are *for people*, since it is people who benefit from their use, and we may also say that brooms are *for sweeping floors*, since that is the activity which results in such benefits. The former reading is a beneficiary-based one; the latter is process-based. On a beneficiary-based reading, stereos are *for music lovers*, while on a process-based reading, stereos are *for playing music*. On a beneficiary-based reading, cat food is *for cats*, while on a process-based reading, cat food is *for feeding cats*.

¹ Johnson (2008), ch.3.
Claims about purposive action exhibit the same ambiguity: Bonnie and Clyde robbed a bank for themselves, but they also did it for the money—that is, they robbed the bank for the sake of getting the money, which is a process. When Odysseus told his fellow Achaeans to construct an enormous wooden horse, he did so both for their sake and for the sake of sneaking them into Troy. On a beneficiary-based reading, Odysseus’ actions are for the Achaeans, who are the beneficiaries; on a process-based reading, they are for the process of sneaking the Achaeans into Troy. Claims about biological functions also exhibit the beneficiary/process ambiguity: Xylem and phloem exist for the sake of an entire plant, but they also exist for the sake of transporting nutrients and hormones within it. A cat’s heart pumps blood for the sake of the cat, but also for the sake of circulating blood throughout the cat’s body. In both cases, the former is a beneficiary-based reading and the latter a process-based one. Our talk of purposes and proper functions is systematically ambiguous between beneficiary- and process-based readings, whether we discuss the purposes of artifacts, actions, or biological organs.

On a Classical Platonist account, purposes are Platonic Forms, and their instances are for them. Yet Platonic Forms cannot be benefitted. So the sense in which a thing’s purpose is its Platonic Form is not the sense in which its purpose is its beneficiary. Platonic Forms are not beneficiaries, and so metaphysical priority is not beneficiary-based teleological dependence.
2. Participation, or: Having a Proper Function

The relationship between having a proper function and performing it is normative: when something has a proper function, it is supposed to perform it—albeit in specific ways and under specific conditions. A heart, for instance, has the proper function of circulating blood throughout the body, and indeed, the heart is supposed to circulate blood throughout the body; that’s what the heart is for. Similarly, the proper function of a broom is to sweep, and brooms are supposed to sweep; the proper function of an eye is to detect light, and eyes are supposed to detect light, and so on. There is a normative relation between hearts and blood circulation, brooms and sweeping, and eyes and light-detection. It is the supposed to perform relation, which obtains between each thing and its proper function. There is a normative relation between things and their proper functions, then: they are supposed to perform them.

At first, it might seem false to say that, without exception, things are supposed to perform their functions. Consider nuclear weapons, whose function is to exterminate life. Consider torture devices, whose function is to inflict pain on it. Surely they are not supposed to perform their proper functions, are they? In fact, there is a sense in which they are, and another sense in which they are not. These senses are none other than the two sides of the de re/de dicto distinction: torture devices are supposed to perform their proper functions de re, but not de dicto.\(^3\)

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\(^2\) Assuming, of course, that nuclear weapons and torture devices really have such functions. One might hold that they have more beneficial functions than that—such as preventing war and gathering information, but these commitments are shaken by the fact that there are certain ways that such artifacts are supposed to go about preventing war and gathering information. In any case, the credulous reader should substitute more malevolent items for bombs and torture devices, if she finds the current examples objectionable.

\(^3\) Kripke (1980), Plantinga (1978). Indeed, as we will see, the notion of a proper function is formally very similar to that of an essence, in that ascriptions of either one require quantifying into a modal context. In the case of ascribing proper functions to things, the modality is deontic.
To illustrate, first note that it is a serious wrong for torture devices to perform their proper function. For it is not supposed to be the case that such functions are performed. A sense in which torture devices are not supposed to perform their proper function, then, is that a certain claim—or dictum—is not supposed to be true, namely the claim that torture devices are performing their proper function. Similarly, if nuclear weapons ever perform their proper function, that too is a serious wrong. It is not supposed to be the case that nuclear weapons perform their proper function. Nuclear weapons are not supposed to perform their proper function, then, in the sense that a certain claim—i.e. “nuclear weapons are performing their proper function” is not supposed to be true. So there is a sense in which torture devices and nuclear weapons are not supposed to perform their functions, namely that certain claims—dictums—are not supposed to be the case. De dicto, nuclear weapons and torture devices are not supposed to perform their proper functions.

However, there is also a sense in which torture devices are supposed to torture people, and nuclear weapons are supposed to exterminate life; and this sense is best captured in the idea that being for torture and being for life-extermination are properties of torture devices and nuclear weapons, respectively. Being for torture and death is how they are, and facts about how they are do not imply anything about what ought to be the case. Scissors, for instance, are supposed to cut. That’s their function. It does not follow from this that it is supposed to be the case that scissors are cutting. Scissors are still for cutting, even when there is no need for their use. The claim about what is supposed to be the case does not follow from the claim about what scissors are supposed to do. Similarly, immune systems are supposed to fight off bodily infections. That is their proper function. It does not follow, however, that it is supposed to be the
case that immune systems are fighting off bodily infections. For immune systems have the proper function of fighting infection even in healthy individuals. So there is a sense in which things are supposed to perform their functions, regardless of what those functions are, and it is associated with treating functions as properties of things. So conceived, a proper function is a way that a certain individual--a res--is supposed to be. De re, torture devices are supposed to torture people.

We have, then, two ways to interpret instances of the schema “*x* is supposed to perform its function.” Interpreted de dicto, they are claims about what is supposed to be the case; interpreted de re, they are claims about how individuals are. Consider the following argument:

\[a. \text{The bomb is supposed to end the war.}\]
\[b. \text{The bomb is an immoral killing machine.}\]
\[c. \text{So an immoral killing machine is supposed to end the war.}\]

In the same way that claims about scissors and immune systems admit of a de dicto and a de re reading, where the former is false and the latter is true, so do (a) and (c) of this argument. On a de dicto reading, the conclusion is false, and obviously so. It is never supposed to be the case that wars are ended through mass killing. On a de re reading, however, the conclusion is true. The bomb is de re supposed to do a particular thing, even though that thing is a moral wrong. Yet the corresponding de dicto claim does not follow. From the fact that the bomb is de re supposed to annihilate all life, it does not follow that *it is supposed to be the case that* the bomb annihilates all life. Again, there is a sense in which things are supposed to perform their functions, regardless of what those functions happen to be. It is that they are de re supposed to.
Some readers may wonder why, in distinguishing the sense in which torture devices are supposed to perform their function from the sense in which they are not, I have appealed to the \textit{de re/de dicto} distinction instead of to \textit{modal restrictions}.\textsuperscript{4} To illustrate, consider the claim “a baboon cannot speak Finnish, but I can.”\textsuperscript{5} It is true. Baboons, unlike me, lack the necessary anatomy for such a feat. Thanks to my anatomy, I can speak Finnish. But, as Lewis says, “don’t bring me on your trip to Helsinki--for I cannot speak Finnish!” There is a sense in which I can speak Finnish, then, and also a sense in which I cannot. And rather than being a case of the \textit{de re/de dicto} distinction, what we have are two features to which we may restrict our attention in considering what is possible. If we consider just my anatomy, and ask what someone with my anatomy is capable of, we find that she can speak Finnish. But if we pay attention to my personal history instead of my anatomy, and ask what is compossible with it, we find that speaking Finnish is not. Thus, the senses in which I can and cannot speak Finnish should not be understood in terms of the \textit{de re/de dicto} distinction; they should be understood in terms of \textit{modal restriction}--that is, as restricting our attention to different features, which are held fixed when considering what is possible. If we treat restrict our attention to just my anatomy and ask what is compatible with it, we find that I can speak Finnish; if we treat my personal history as a constant, too, we find I cannot.

Modal restrictions elucidate the senses in which I can and cannot speak Finnish, but not the senses in which torture devices \textit{should} and \textit{should not} perform their function. To see why, consider an artifact whose function should \textit{never} be performed under \textit{any} circumstances, no matter what. Suppose, for instance, that the evil Mad Bomber creates the Omni-Bomb, whose

\textsuperscript{4} One such reader, Meg Wallace, contributed helpful discussion on this point.

\textsuperscript{5} The example and its foregoing interpretation are from Lewis (1976).
intended purpose is to annihilate all life in the universe in the most excruciating possible way. Suppose The Mad Bomber has taken special care to ensure that the Omni-Bomb will do exactly this, and that the Omni-Bomb’s parts are delicately arranged to make it happen. There is a sense in which the Omni-Bomb is supposed to annihilate all life-- for that is its function--but there are no possible situations in which it is supposed to be the case that the Omni-Bomb annihilates all life. There is a sense in which the Omni-Bomb is supposed to annihilate all life, but it cannot be explained as a restriction of our attention to the situations in which all life ought to be annihilated; for there are no such situations. What is true for the Omni-Bomb is true generally: the sense in which things are supposed to perform their function cannot be explained as a restriction of our attention to the situations in which their function is supposed to be performed.\textsuperscript{6}

It would be misleading to call the \textit{de re} sense in which things are supposed to perform their proper functions “\textit{de re} obligation,” since the word “obligation” distinctly connotes social institutions, such as laws and promises. We would not say, for instance, that hearts have an \textit{obligation} to circulate blood, or that brooms have an \textit{obligation} to sweep, since there is no social institution contracting them to do so. Yet philosophers’ usual name for deontic necessity--the necessity of \textit{should} and \textit{supposed to}--is “obligation,” particularly in technical discussions of the \textit{de re/de dicto} distinction. Proper functions are cases of deontic necessity \textit{de re}; so when I claim that something is \textit{de re} obligated to perform its function, I do not mean that it has entered a contractual agreement, or that the thing is an agent. I only mean that it is \textit{supposed to} do that thing, and supposed to do it \textit{de re}, in the sense just carefully described.

\textsuperscript{6} Nor can it be explained in terms of intention or design, for we may imagine biological organs that should never perform their proper functions. Consider an unfortunate species that evolves to have an omni-bomb-like spandrel ability.
In ordinary English, *de re* obligation is denoted with possessive terms: eyes *have* the proper function of detecting light, brooms *have* the purpose of sweeping, cats *have* the proper function of flourishing, and so on. Yet such talk is philosophically imprecise; there are many different ways to *have* something. Consider all the different meanings of “have” in the following sentence:

*d.* I have long hair, and if I want to have fun then I will have cake.

Here the word “have” appears to have(!) three subtly different meanings, none of which are obviously the same as the sense in which things *have* proper functions. Such uses and more, however, are so common in English as to be ineliminable. So when we discuss Classical Platonism, we will often need to use the word “have,” and it would be helpful if “have” were not *itself* a technical term of the theory. It is best if, in our metaphysical theorizing, we leave the word “have” where we found it--in ordinary language--and pick a different name for the specific relation that obtains between a thing and its proper function.

Following the canonical translations of Plato, we will say that a thing has a proper function exactly when it *participates* in a Platonic Form. A thing participates in a Form, in turn, just in case it is *de re* supposed to instantiate it, in the way that hearts are *de re* supposed to circulate blood, brooms are *de re* supposed to sweep, and things in general are *de re* supposed to perform their proper functions. To have a proper function, then, is to participate in a Form.
3. Instantiation, or: Performing a Proper Function

Many things have proper functions without performing them. A broom has the proper function of sweeping floors, even while leaning against a wall. An eye has the proper function of detecting light, even while its owner sleeps. A cell phone has the proper function of sending and receiving signals, even when it is turned off, and so on. Performing a function is therefore distinct from having it; performance is not participation.

The philosophical literature on types already has a name for performance: instantiation. To instantiate a type is to be a token of that type. Proper functions—i.e. the Forms—are types of processes, and their tokens are individual performances of them. To instantiate a Form, then, is to do something; an ontology of Forms is an ontology of processes.

Things perform their proper functions by exhibiting certain features over time. As the heart performs its proper function, for instance, it has certain properties: first it has one shape, then another; first its muscular tissue contracts, then it expands; at different times it has different features. We may say that something instantiates a Form by having these features. To instantiate the Form of the Heart, for instance, is to perform the proper function of hearts; to instantiate the Form of the Broom is to perform the proper function of brooms; to instantiate the Form of the Cat is to perform the proper function of cats; and so on.

Why use both terms? Why complicate matters by using “instantiation” as well as “performance”? Because, in addition to avoiding awkward-sounding phrases like “perform a Form” and “a Form performed by,” the term “instantiate” conveniently reminds us that

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7 With the exception of Aristotelian activities, which are proper functions that can be instantaneously performed in their entirety. ...

8 There are naturally many ways to perform these functions. We will return to this point when we discuss Platonic Determinants—certain sorts of structural universals that are dependent on the Forms—and the objection David Lewis raises against them.
performing a function is just a special case of having properties, and that Forms play roles both in the metaphysics of teleology and in the metaphysics of predication.\textsuperscript{9}

\textsuperscript{9} We will encounter the Classical Platonist account of predication when we turn to the topic of Platonic Determinants, in §5-8 of this chapter.
4. Multiple Purposes and Primary Forms

Very often, things have have more than one proper function. In some cases, different functions are had by different parts of a single item, as with a Swiss army knife. In more interesting cases, however, the entire thing has more than one proper function. As an example, consider a cat, Felix, who is at once a cat, a pet, and a mascot. Felix therefore has three proper functions. He participates in three Platonic Forms: the Form of the Cat, the Form of the Pet, and the Form of the Mascot. Or consider a festively decorated mannequin, placed in a cornfield, which properly functions not only as a scarecrow but also as a Halloween decoration. The mannequin would participate in both the Form of the Scarecrow and the Form of the Halloween Decoration.¹⁰

When considering objects that have more than one proper function, it is crucial to remember that having a proper function is different from merely serving some purpose or other. As they sleep, Juliet’s shoulder might function as a pillow for Romeo, but this does not mean that Juliet’s shoulder has a pillow’s proper function. Juliet’s shoulder serves the pillow function, but it is not one of her shoulder’s proper functions. The mere fact that something can be used for various purposes, then, does not mean that it has many proper functions. A thing’s proper functions are the functions it has a de re obligation to perform. Juliet’s shoulder does not participate in the Form of the Pillow.

At first, it may seem problematic for something to participate in more than one Platonic Form, since the obligation to instantiate one Form might conflict with the obligation to instantiate another. Suppose, for instance, that Felix would be a better pet if he were neutered, since he would destroy less furniture, but that he would also be a worse mascot, since he would

¹⁰ Assuming, of course, that there are such Forms. The question of which Forms there are--i.e. the scope of the Forms--will not be taken up here.
not behave in an excitable way that humors fans. Would it improve Felix to be neutered? Would it make him better? Since he participates in the Form of the Pet, it would; but since he participates in the Form of the Mascot, it would not. From the assumption that Felix participates in more than one Form, we seem to get the result that Felix both would and would not be improved by a neutering. So it seems Felix cannot participate in more than one Form.

One quick solution to this problem would be to deny that Felix can be harmed simpliciter, and to maintain instead that Felix can only be harmed relative to some standard. Yet this seems to get things wrong. For there do seem to be things that are just plain good for Felix--cat food, for instance--and it also seems like some standards of harm are objectively more relevant to Felix’s well-being than others.

Fortunately, there is a simpler way to deal with Felix; we can rank his proper functions. Just as, in ordinary English, we distinguish a thing’s primary function from its auxiliary or secondary functions, so does Classical Platonism distinguish a thing’s primary Form, which is the Form it participates in most, from its secondary Forms, which it participates in less. To have many proper functions, then, is to participate in many Forms, and to have a primary function is to participate in one Form more than in any other.

So participation admits of degrees; is not an all-or-nothing matter. In admitting of degrees, however, it accrues no mystery, for participation was just defined as the de re obligation to instantiate, and the familiar fact that obligation admits of degrees would naturally suggest that participation does so too. We all know that an agent can be more or less obligated to do something, and we also know that artifacts are supposed to do some things more than they are supposed to do others. To participate in a Form, then, is to be de re obligated to instantiate it, and
the Form that one participates in most of all--one’s primary Form--is just the Form one is most 
obligated to instantiate. So there is no harm in allowing participation to admit of degrees.

Degrees of obligation are readily intelligible, and they can be used to model our understanding of
what it is to have a primary proper function.
5. Platonic Forms as Determinable Types

There are many ways for something to perform its proper function: something can perform its function slowly or quickly, well or poorly, beautifully or hideously, with a flourish or in a humdrum way, and so on. Since things can perform their proper functions in different ways, and since things perform their proper functions by instantiating Platonic Forms, there must be many ways to instantiate a Platonic Form.

Unlike participation, however, instantiation does not admit of degrees. Nor does it admit of variety. A Form’s instantiation is an all-or-nothing matter, and there is only one kind of instantiation. Things that perform the same function in different ways should not, therefore, be thought of as instantiating the same Form to different degrees. Nor should they be thought of as standing in different kinds of instantiation relations, since there is only one kind of instantiation. Rather, they should be thought of as bearing the same instantiation relation, to the same Form, but to different determinants of that Form. Instead of allowing for degrees of instantiation, or for different kinds of it, the Classical Platonist treats Platonic Forms as determinable types of processes, and proliferates her ontology with special determinants of them. Classical Platonism holds that the Forms are determinable types, on which certain determinants--Platonic Determinants--are metaphysically dependent.\(^{11}\)

A Platonic Determinant is a maximally specific way of performing a proper function. There are no ordinary English names for such things, so examples of Determinants are best generated in stages. First, consider one of the general ways in which something--a broom, say--can perform its proper function. A broom might perform its function well, for instance. When a

\(^{11}\) Henceforth, "Determinant" with a capital "D" will refer to Platonic Determinants.
broom performs its function well, however, there are still many ways for it to perform its function well. A broom might perform its function well, say, by having densely-packed bristles, or it might perform its function well by having stiff bristles, or it might perform its function well in some other way. These ways get even more specific: a broom might perform its function well by having densely-packed bristles, arranged precisely thus-and-so, made of chemicals XYZ, while wielded exactly so on such-and-such a floor; or it might perform its function well in exactly the same way, but on a slightly different floor; and so on. With some imagination, we can imagine a maximally specific way for a broom to perform its function: a way that is specific down to the level of microscopic detail, and which is so exact in all its aspects that few sweepings would ever have it in common. Such an entity is a Platonic Determinant—specifically, a Determinant of the Form of the Broom.

Like the Forms, Platonic Determinants are abstract, occupying neither space nor time; and like the Forms, Determinants are properties that can be instantiated by things. A particular object, such as a broom or a cat, instantiates its Form by instantiating one of its Form’s Determinants. Just as something is colored by being of a specific shade, or hot by being a particular temperature, so does a cat instantiate the Cat Form by instantiating one of its Determinants.

Unlike Platonic Forms, however, Determinants are maximally specific: there are many ways to instantiate a Form, but only one way to instantiate a Determinant. Furthermore, because Platonic Determinants are maximally specific ways to perform a proper function, and because proper functions, as discussed in §3.2, take time to perform, it follows that Platonic Determinants are maximally specific sorts of events. Determinants of the Form of the Broom, for instance, are....
various possible sweepings, each of which is completely precise in all its properties, including duration. Likewise, the Form of the Cat’s Determinants are various possible cat lives, each of which begins with the genesis of a kitten, and which may end in a variety of ways.\textsuperscript{12}

Platonic Determinants are not the same as their instances. A specific way for a broom to sweep is different from the broom that actually sweeps that way, just as a certain sort of cat life is different from the cat who lives it. Again, like the Forms, Determinants are properties rather than material particulars, and they are different from things that instantiate them.

Classical Platonism’s four-tiered ontology therefore admits of a further division at the level of proper functions. For in addition to proper Platonic Forms, which are determinable types of processes--proper functions, specifically--there are also their Determinants, which are metaphysically dependent on the Forms:

\begin{center}
\begin{tikzpicture}
  \node[rectangle,draw] (good) at (0,0) {The Good};
  \node[rectangle,draw,below of=good] (functions) {Proper Functions};
  \node[rectangle,draw,below of=functions] (wholes) {Integrated Wholes};
  \node[rectangle,draw,below of=wholes] (matter) {Matter};
  \node[rectangle,draw,right of=matter,xshift=3cm] (forms) {Platonic Forms};
  \node[rectangle,draw,below of=forms] (detforms) {Platonic Determinants};
  \node[rectangle,draw,right of=detforms,xshift=3cm] (f1) {f$_1$};
  \node[rectangle,draw,right of=f1,xshift=1cm] (f2) {f$_2$};
  \node[rectangle,draw,right of=f2,xshift=1cm] (f3) {f$_3$};
  \node[rectangle,draw,right of=f1,xshift=-1cm] (g1) {g$_1$};
  \node[rectangle,draw,right of=g1,xshift=1cm] (g2) {g$_2$};
  \node[rectangle,draw,right of=g2,xshift=1cm] (g3) {g$_3$};
  \draw[->] (good) -- (functions);
  \draw[->] (functions) -- (wholes);
  \draw[->] (wholes) -- (matter);
  \draw[->] (forms) -- (detforms);
  \draw[->] (f1) -- (f2) -- (f3);
  \draw[->] (g1) -- (g2) -- (g3);
\end{tikzpicture}
\end{center}

In the above diagram, upper-case letters represent the Forms and lower-case letters represent their Determinants. Determinants are teleologically dependent on Forms, since the Forms are

\textsuperscript{12} Platonic Determinants are therefore very much like Lewisian possibilia, with the exception of the fact that they are not concrete, and that they are not naturally grouped into spatially unified worlds. See §7.
themselves just ways to achieve the Good, and Determinants are just ways to achieve the Forms. Matter, likewise, is the means for supporting and constituting integrated wholes, and integrated wholes have as their goal the achievement of the Forms via the Determinants.

In current philosophical terminology, Platonic Determinants are best described as structural universals, which makes them candidates for Lewis’ famous criticism in “Against Structural Universals.”13 According to Lewis, structural universals cannot exist because they require brute necessary connections between distinct existences, which is absurd. It is to that criticism, therefore, and to the Classical Platonist response, that we now turn.

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13 Lewis (1986b).
6. Platonic Determinants and the Problem of Structural Universals

A structure is a property whose instances have parts of a specific type and arrangement. The property of *BEING A BROOM*, for example, is a structure. Anything that has the property of *BEING A BROOM* must have parts--namely, a handle and a brush--and those parts must be arranged in a certain way--namely, with the brush at the end of the handle, bristles pointed away from it.

A universal is a repeatable property or relation; it can have multiple instances, and it is somehow shared in its entirety by each instance. If *REDNESS* is a universal, then an apple’s red color is one and the same thing as any other apple’s red color. If *REDNESS* is a universal, no red apple has a mere part of *REDNESS*; each apple has the whole color.

A structural universal, then, is a repeatable property, whose instances have parts with repeatable properties.\(^\text{14}\) David Lewis’ example is *METHANE*, instantiated by all and only methane molecules: anything that instantiates *METHANE* must have exactly one part that instantiates *CARBON*, four parts that instantiate *HYDROGEN*, and the relation *BONDED* must hold between each part that instantiates *HYDROGEN* and the part that instantiates *CARBON*.\(^\text{15}\) A simpler example is *BINARY STAR-HOOD*, instantiated by exactly those pairs of stars that orbit a common center of mass. Anything that instantiates *BINARY STAR-HOOD* has to have two parts that instantiate *STAR-HOOD*, and those parts have to be related in a certain way. A third example is the Platonic Determinant *CAT LIFE #17*, instantiated by all and only cats who live a very specific sort of life, and whose instances’ parts have properties like *CAT HEART-HOOD* and *CAT BRAIN-HOOD*. Structural universals are repeatable properties, whose instances’ parts have certain repeatable properties.

Structural universals provide elegant answers to several questions in metaphysics,


\(^{15}\) Lewis (1986b).
including that of what resemblance is, what a law of nature is, and what a possible world is, but there is a well-known problem with them: they require necessary connections between distinct existences. Any two things—if they are indeed two and not one—can exist apart from one another. The universal METHANE is one thing, while the universal CARBON is another. BINARY STAR-HOOD is one thing; STAR-HOOD another. CAT LIFE #17 is one thing; CAT BRAIN-HOOD another. Structural universals are distinct from the universals had by their instances’ parts. So how could they be necessarily connected? Why must CARBON be present wherever METHANE is? Why must STAR-HOOD be present wherever BINARY STAR-HOOD is? Why must CAT BRAIN-HOOD be present wherever CAT LIFE #17 is? Never mind the features that are specific to cats and stars, or to methane molecules; this is a problem about all structures.16 Never mind the meanings of the predicates that name the universals; the fact that one universal is called “binary star-hood” while another is called “star-hood” does not explain how one could be necessarily connected to the other—no more, at any rate, than does naming the relation between them “necessitation.” Instead of calling them “star-hood” and “binary star-hood,” call them “Zim” and “Zam.” The point is that Zim is one thing, and Zam is another. They are distinct. Whence the necessary connection?17

The problem is best put as an inconsistent triad:

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16 Including mathematical ones. Consider a dot-matrix universe, whose only non-structural property is the universal DOT-HOOD, and whose structural properties include universals like BEING A PAIR OF ADJACENT DOTS and BEING FOUR ADJACENT DOTS ARRANGED IN A SQUARE.

e. There are no necessary connections between distinct entities.\textsuperscript{18}

f. A structural universal is distinct from the universals it \textit{involves}.\textsuperscript{19}

g. There is a necessary connection between a structural universal and the universals it involves.

Since the inconsistency between (e)-(g) is evident, and the truth of both (f) and (g) is built into the very idea of a structural universal, the source of trouble must lie in (e). Standard solutions to the problem of structural universals, therefore, deny (e), producing various accounts of involvement as a result.\textsuperscript{20} Standard solutions, in other words, attempt to explain the necessary connection between universals by showing that it is a familiar sort of connection--like the connection between parts and a whole, or between a definition and the terms in which it is defined. Unfortunately, none of them are successful.

\textit{6.1. The Mereological Account.}

The Mereological Account of involvement states that structural universals have \textit{parts}, and that their parts are the universals they involve. Consider again the structural universal \textit{METHANE}.

On the Mereological Account, not only do individual methane molecules have parts, but so does the universal \textit{METHANE} itself; the universals \textit{CARBON}, \textit{HYDROGEN}, and \textit{BONDED} are the universal

\textsuperscript{18} Lewis (1986a) pp. 87-91, (1986c), and (1998).

\textsuperscript{19} The term "involvement" is a placeholder for whatever necessary connection obtains between a structural universal and the universals instantiated by its instances’ parts. Entities x and y are distinct just in case both (x is neither a part of y nor is y a part of x) and (x and y do not overlap--i.e. there is no z such that z is a part of both x and y).

\textsuperscript{20} Proposed counterexamples to (e) often invoke strange entities, such as states of affairs, haecceities, mathematical objects, and instantaneous processes, which an opponent of structural universals is well within her rights to reject. I will not discuss any of these \textit{acrimonia} here.
METHANE’s proper parts. Under the Mereological Account, involvement is proper parthood, and the reason why a structural universal is always found with the universals it involves is that a whole is always found with its parts.\(^{21}\)

The problem with the Mereological Account is that a structural universal can involve another universal several times at once, but a whole cannot have the same part several times at once. So the relation of involvement is not proper parthood. To see why, consider a very simple structural universal: \textit{BEING A PAIR OF STARS}, which involves the universal \textit{STAR-HOOD}. Under the mereological account, \textit{STAR-HOOD} is a proper part of \textit{BEING A PAIR OF STARS}. It is not an improper part, for then we would have one universal rather than two. So in addition to the property of \textit{STAR-HOOD}, there must be something that makes up the rest of \textit{BEING A PAIR OF STARS}. But what? Not \textit{STAR-HOOD} again. For although there is a sense in which something can have a part twice, it is not the sense required here. If my car’s steering wheel is detached and then re-attached, we can say that my car has had its steering wheel as a part \textit{twice}: once before the re-attachment, and once after. But \textit{BEING a PAIR OF STARS} does not have \textit{STAR-HOOD} twice in the way that my car has its steering wheel twice. \textit{BEING a PAIR OF STARS} has \textit{STAR-HOOD} twice \textit{simultaneously}, not serially.

The problem cannot be solved by identifying the parts of \textit{BEING A PAIR OF STARS} with \textit{STAR-HOOD} and \textit{BEING A PAIR OF}. For consider two structural universals, one of which is \textit{BEING A PAIR OF STARS AND A CAT}, the other of which is \textit{BEING A PAIR OF CATS AND A STAR}. Both universals involve \textit{STAR-HOOD, CAT-HOOD}, and \textit{BEING A PAIR OF}. If \textit{BEING A PAIR OF STARS} is just the sum of

\(^{21}\) The mereological account of involvement is thus the same thing as what Lewis (1986b) calls “the pictorial conception” of structural universals. Under that name, it has been defended by Armstrong (1986), Bigelow (1986), and Forrest (1986). As Hawley (2010) observes, the Mereological Account presupposes not only that mereological essentialism is true of structural universals, but also that such a condition is supposed to preclude the possibility of separating a structure’s involved universals—which, as she rightfully demonstrates, it does not. Though I take it to be correct, I will not discuss Hawley’s criticism of the Mereological Account further.
STAR-HOOD and BEING A PAIR OF, then BEING A PAIR OF STARS AND A CAT is identical to BEING A PAIR OF CATS AND A STAR, since each would have to be identical to the sum of STAR-HOOD, CAT-HOOD, and BEING A PAIR OF. The problem remains: a structure can involve the same universal several times at once, but a whole cannot have the same part several times at once. So involvement cannot be parthood. 22

Defenders of the Mereological Account have attempted to solve the problem: Peter Forrest distinguishes two subtly different notions of parthood, arguing that one of them permits a single part to be had several times at once, 23 and David Armstrong cites instances of asymmetric relations as counterexamples to the uniqueness of mereological composition, after which he argues that, if the uniqueness of mereological composition is false, there is nothing absurd about having the same part several times over. 24 However, neither response solves the problem.

Forrest’s distinction, which is drawn in terms of structure, ultimately fails to explain how a part can be had many times, 25 and Armstrong’s counterexample to the uniqueness of mereological composition is doubly ineffective: not only does it invoke a brute, asymmetric truthmaking...
relation that is as mysterious as *involvement*, but it is also irrelevant to the problem. If the uniqueness of mereological composition is false, that just means that the same parts can compose more than one whole. It does *not* mean that the same part can be had several times at once, nor does it explain how such a feat is possible. Neither Forrest’s nor Armstrong’s responses work. The Mereological Account of *involvement* fails to solve the problem with structural universals.

6.2. The Linguistic Account.

The Linguistic Account of *involvement* holds that structural universals are compound words in a *Lagadonian language*—that is, a language in which each thing functions as its own name, and whose simple words are non-structural universals. So construed, a structural universal is *analytically* tied to the universals it involves; it is defined in terms of them. Furthermore, the possibility of *recursive* definition guarantees that there is no worry about involving the same universal several times at once. The connection of *involvement*, under the Linguistic Account, is analyticity.

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26 Suppose a thing x has a contingent feature F. Armstrong takes a claim's truth to be necessary for the existence of its truthmaker, so even though x is F, x cannot be the truthmaker for “x is F.” Furthermore, since the *truthmaking* relation is asymmetric, and since the supervenience of a proposition’s truth on its truthmaker is symmetric, it follows that the *truthmaking* relation isn’t supervenience. So to ground the truth of “x is F”, Armstrong claims that there must exist something in addition to x, which is named by the gerundive phrase “x’s being F.” But why? x is one thing; x’s being F another. Never mind the fact that one of the entities is called “x’s being F.” Call them Zim and Zam instead. They are distinct. So why can’t one cease to exist, leaving the other unchanged? The answer must appeal to the brute *truthmaking* relation, which, given the ontology it directs us to, is no less mysterious than that of *involvement*.

27 “A state-description in a Lagadonian language will be a set-theoretic construction out of the predicates and the negation symbol, whatever those are, together with the members of a given domain, each one serving as its own name.” Lewis (1986a) pp. 145.

28 Lewis (1986b) pp. 104: “On the linguistic conception, a structural universal is a set-theoretic construction out of simple universals, in just the way that a (parsed) linguistic expression can be taken as a set-theoretic construction out of its words. ... And there can be no mystery about how these connections can be necessary: they hold by definition. They are just consequences of a semantic recursion which defines satisfaction of complex predicates in terms of the satisfaction of simple ones that are the vocabulary from which the complex predicate is built up; in other words, which defines the instantiation of structural universals in terms of the instantiation of simple universals they involve.”
If it is essential to languages that they can be spoken or written, then the fact that things cannot be spoken or written would show that Lagadonian languages are not really languages of any kind, in which case Lagadonian analyticity cannot be a substantive account of involvement. Indeed, there is reason to doubt the very idea of a Lagadonian language. Its “vocabulary” is a domain of objects, not words. Consequently, its “analyticities” are necessary connections between things, not meanings. Appeals to Lagadonian analyticities, therefore, do nothing to elucidate the mystery of necessary connections between things.

Aside from worries about Lagadonian languages, however, the Linguistic Account entails that it is impossible for matter to be infinitely complex.

Matter is infinitely complex just in case every node of every structured material object is itself structured. As an example, take a methane molecule, which is a structured object. The nodes of its structure are its constituent atoms. Each atom has an inner structure, whose nodes are quarks. If matter were infinitely complex, the quarks themselves would have inner structure, with nodes that have inner structure, whose nodes also have inner structure, and so on ad infinitum. To say that matter is infinitely complex, then, is to say that structured objects are divisible in this way, and that there is structure “all the way down.”

The Linguistic Account entails that, necessarily, the structure stops somewhere--that there is a “bottom level of nature,” which has no structure of its own. For on the Linguistic Account, structural universals are definitions in a language--albeit a language whose predicates are universals and set-theoretic constructions of universals, not words. If linguistic definitions must be finite in length, or if the set theory used to construct Lagadonian definitions includes the
axiom of regularity, then the Linguistic Account cannot allow for the possibility of infinitely complex matter. For on the Linguistic Account, the definitions in nature’s language cannot be infinitely long. To prevent infinitely long Lagadonian definitions, there must be simple, non-structural properties. So the Linguistic Account entails that infinite material complexity is impossible.

Such a conclusion, however, is too great to be drawn from a metaphysics of properties. It may turn out that matter is finitely complex, of course; but if it is, this would be a contingent affair. It would still be possible, in other words, for the world to have contained infinite material complexity, even if, as a matter of fact, there is no such thing. Infinite material complexity is possible, but the Linguistic Account entails that it is impossible. So the Linguistic Account is false.

6.3. The Constitution Account.

In “Mereology, Modality, and Magic,” Katherine Hawley presents an account of involvement in terms of constitution rather than parthood, arguing that the relation tying METHANE to the universals HYDROGEN, CARBON, and BONDED is the same as that tying a clay statue to the clay from which it is made. On Hawley’s account, CARBON is present whenever METHANE is because METHANE is partially constituted by CARBON, and a thing’s constituent elements must be present wherever it is. On Hawley’s account--which we will call the

29 The axiom of regularity states that no set is an element of itself.


31 Hawley (2010).
Constitution Account—the relation between a structural universal and a universal instantiated by its instances’ parts is constitution.

At first it should seem that the Constitution Account suffers from the same problem as the Mereological Account. For just as a whole cannot have the same part more than once at the same time, nor can a whole be constituted out of the same elements more than once at the same time. A clay statue, for instance, cannot be made up of the same clay twice at once; a single bit of clay cannot simultaneously constitute one and the same statue multiple times. That simply isn’t how constitution works. Likewise, the universal METHANE cannot be made up of the same universal CARBON multiple times at once; the universal CARBON cannot partly constitute the same structure more than once at the same time. Nor can the universal STAR-HOOD constitute anything twice at the same time, such as the structural universal BEING A PAIR OF STARS. On its face, the Constitution Account is flawed in the same way as the Mereological Account.

Hawley’s response to this problem can be presented in two short steps. First, note that two different wholes can be constituted of the same matter at once—as a clay statue and a lump of clay are constituted by the same clay. Second, note that when structural universals differ only in the number of one of their involved universals’ instances—as do STAR-HOOD and BEING A PAIR OF STARS—they are constituted out of the same universals. The difference between STAR-HOOD and BEING A PAIR OF STARS, then, might be treated as the same sort of difference that obtains between a clay statue and a lump simultaneously constituted out of the same clay. Yet which sort of a difference is this, exactly?

On Hawley’s account, a clay statue and a clay lump can be made of the same clay, but made of the same clay in different ways. Likewise, the structural universals METHANE and BUTANE
are differently constituted by HYDROGEN, CARBON, and BONDED; just as STAR-HOOD and BEING A PAIR OF STARS are differently constituted from STAR-HOOD; and BEING A PAIR OF STARS AND A CAT is differently constituted from STAR-HOOD, CAT-HOOD, and BEING A PAIR OF than BEING A PAIR OF CATS AND A STAR. Hawley countenances different ways for the same elements to constitute different things at the same time, then. Her own explanation’s lucidity warrants quoting it at length:

...statue and lump are supposed to be analogous to being methane and being butane, which share all their parts... [H]owever, there is a sense in which statue and lump ‘differ in respect of their composition’, and this may help us understand both the differences between being methane and being butane, and the consequent differences between their instances. Statue and lump share all their basic parts, but there is a sense in which each stands in a different relation to those parts (on this view). For example, the statue imposes a certain spatial arrangement upon the parts, in the sense that that very statue could not have had an entirely different shape, whilst the lump is more tolerant. Perhaps there is a similar sense in which being methane, being butane, and being isobutane stand in different relations to the same parts (being carbon, being hydrogen, and a bonding relation). What relations? Well, those relations which underpin the relevant standards of coinstantiation. Of course this isn’t terribly illuminating. My point is just that advocates of structural universals need not take the differences between methane, butane, and isobutane as brute facts, but can instead see these differences as grounded in the different relations each universal bears to its parts.

On Hawley’s proposal, then, “the differences between methane, butane, and isobutane,”—as well as between all other such structural universals—are due to there being “different relations” between “each universal and its parts.” The difference between METHANE, BUTANE, and ISOBUTANE, then, is that each one stands in a different sort of relation to the involved universals HYDROGEN, CARBON, and BONDED. Similarly, the difference between STAR-HOOD, BEING A PAIR OF STARS, and BEING A TRIO OF STARS is that each one stands in a different relation to STAR-HOOD.

More specifically, the structural universal BEING A PAIR OF STARS stands in the relation of HAVING TWO PARTS, EACH OF WHICH INSTANTIATES to the universal STAR-HOOD; and that the structural
universal *BEING A TRIO OF STARS* stands in the relation of *HAVING THREE PARTS, EACH OF WHICH INSTANTIATES* to the universal *STAR-HOOD*. Hawley avoids the problem with the Mereological Account, then, by treating structural universals as *relational* entities. She does not specify which relational entities, but she has two options. They may either be *relations* of variable polyadicity, whose respective relata are the structural universal’s instance and the involved universals; or they may be *relational properties*, which are instantiated by standing in certain relations to involved universals. Because each of these options has enjoyed a recent defense, however, it is to them that we now turn.

6.4. The Relational Account.

On the Relational Account of involvement, structural universals are not really monadic properties. Instead, they are complex relations between their involved universals’ instances.\(^{32}\) *METHANE*, on the Relational Account, is a relation between things that instantiate *HYDROGEN*, *CARBON*, and *BONDED*. Far from speaking of a single molecule instantiating *METHANE*, it would be closer to the truth to say that five atoms have been *METHANED* together. Similarly, *BINARY STAR-HOOD* is not really an intrinsic property of any one thing on the Relational Account. On the Relational Account, it would be more correct to say that two stars are *BINARIED*.

The problem with the Relational Account is that it accords a secondary status to structured objects, construing them as mere marriages of parts. In so doing, it appears to deal inadequately with *organisms*, whose conditions of flourishing seem to differ from those of their organs. To see why, first consider the Platonic Determinant *CAT LIFE #17*. Under the Relational

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\(^{32}\) Pagès (2002). Bigelow and Pargetter’s original account, on which Pagès’ appears to be a variant, is discussed below.
Account, *CAT LIFE #17* is really just a relation between parts and stages that instantiate *CAT HEART-HOOD, CAT BRAIN-HOOD,* and the like. Instead of saying that a single thing is a cat, it would be more correct to say that various parts are *CATTED* together.³³

Next, consider a Nozickean pleasure machine for cats: a life-support system, which directly stimulates a cat’s brain with electrodes, causing pleasant hallucinations of life as a healthy cat. Suppose that the machine also feeds, exercises, and administers medicine to its inhabitant, facilitating statistically normal growth and development. Yet however well the machine feeds the cat and maintains its health, it cannot make the cat *perfectly* well-off. For even if one is inclined to say that a cat is well-off in the machine, it cannot be denied that such a cat would be missing out on something. Her disconnection from reality would be a harm; it would prevent her from being perfectly well-off. So a cat cannot be perfectly well-off in the pleasure machine.

A cat’s *parts*, however, might differ from a cat in this respect. For in the pleasure machine, a configuration of cat parts is kept in perfect harmony. Each organ functions perfectly within the whole organism; each contributes to homeostasis. The respiratory system still supplies the blood with oxygen, the gastrointestinal system still metabolizes, the optic nerves are stimulated with photo-technology, and so on. Its parts are in constant harmony, kept in perfect working order. In that sense, they are perfectly healthy. There is a sense, then, in which a configuration of cat parts can be perfectly healthy in the pleasure machine, even when the cat

³³ *Or perhaps CONCATENATED.*
they compose is not. It is therefore natural to conclude that cats and other organisms are more than just their parts; for it seems that their parts can flourish when they do not.\footnote{One may make similar arguments about the organs--i.e. that an eye cannot be perfectly healthy unless it is develops under real light rather than under phototechnics; that a muscle cannot be perfectly healthy unless it grows as a result of real exercise; and so on. Yet the standard of health that requires organs to be in contact with their environment to be healthy also requires their integration into an entire organism to be healthy. If an eye cannot be perfectly healthy without responding to real light, it also cannot be perfectly healthy unless it is really responding, to it--i.e. sending signals through the body of a whole organism. So the intuition that the pleasure machine harms the cat’s parts rests on the more basic intuition that the pleasure machine harms the \textit{whole cat}. The intuition that the machine does \textit{not} harm the cat’s parts, however, does not presuppose that the machine fails to harm the whole cat.}

The Relational Account, which treats structured objects as configurations of parts, cannot allow organisms to be anything more than that. The Relational Account therefore requires a contentious answer to a philosophical question about organisms, and this counts against the Relational Account. Whether organisms are mere configurations of parts is both controversial and separate from the problem of structural universals, and one should not be forced to take a side simply to solve a technical problem in one’s theory of properties. So the Relational Account does not adequately solve the problem with structural universals.

6.5. The Relational Property Variant.\footnote{Although I use the term “variant,” Bigelow and Pargetter’s view was developed prior to Pagès.}

Bigelow and Pargetter identify structural universals with “highly conjunctive second order relational propert[ies]”. Sticking to the letter of their account, structural universals are not really relations, like \textit{BEING NEXT TO}, or \textit{BEING OLDER THAN}. Instead, they are “relational properties,” like \textit{BEING AN UNCLE} or \textit{BEING A NATIVE ATHENIAN}.\footnote{Bigelow and Pargetter (1989), pp. 224.} \textit{METHANE}, on this account, is a property something has in virtue of standing in a highly complicated relation to the universals that \textit{METHANE} involves. Rather than being a relation between the atoms that instantiate
HYDROGEN, CARBON, and BONDED, METHANE is a property of methane molecules, whose name includes phrases like “having a part that instantiates...” and “having two parts that stand in the relation of...”, which they instantiate by being suitably related to HYDROGEN, CARBON, and BONDED. On the Relational Property account, the property of BEING A PAIR OF STARS is really just the property of HAVING TWO PARTS THAT INSTANTIATE STAR-HOOD, and the property of BINARY STAR-HOOD is really just the property of HAVING TWO PARTS THAT BOTH INSTANTIATE STARHOOD AND ORBIT A COMMON CENTER OF MASS. The property of METHANE is considerably more complicated.37

Summarily, Bigelow and Pargetter’s account holds that a structural universal is a way of having one’s parts configured.

The problem with Bigelow and Pargetter’s account is that, like the Relational Account, it treats structured objects as mere configurations of their parts. By their account, CAT LIFE #17 is the property of having certain sorts of parts, which instantiate CAT BRAIN-HOOD, CAT HEART-HOOD and the like. To be a cat, in other words, is simply to have cat-parts in a certain arrangement; cats and their lives are are configurations of cat parts. Yet this is the same unwelcome result that the Relational Account has. So as a theory of structural universals in general, their account fails.

6.6. The Classical Platonist Account

Classical Platonism, which identifies Determinants with certain sorts of structural universals, holds that the instantiation of a structural universal is the achievement of an end, and

37 With the relata highlighted, the relational property of METHANE would be best named with the following predicate: ... HAVING A PART THAT INSTANTIATES CARBON AND HAVING A SECOND PART THAT IS DISTINCT FROM THE FIRST PART, WHICH INSTANTIATES HYDROGEN WHILE BEING BONDED TO THE FIRST PART, AND HAVING A THIRD PART THAT IS DISTINCT FROM BOTH THE FIRST AND THE SECOND PARTS, WHICH INSTANTIATES HYDROGEN WHILE BEING BONDED TO THE FIRST PART, AND HAVING A FOURTH PART THAT IS DISTINCT FROM EACH OF THE FIRST, SECOND, AND THIRD PARTS, WHICH INSTANTIATES HYDROGEN WHILE BEING BONDED TO THE FIRST PART, AND HAVING A FIFTH PART THAT IS DISTINCT FROM EACH OF THE FIRST, SECOND, THIRD, AND FOURTH PARTS, WHICH INSTANTIATES HYDROGEN WHILE BEING BONDED TO THE FIRST PART.
that the instantiation of its involved universals is the achievement of the end’s constitutive means. According to Classical Platonism, a structural universal is an end to which the involved universals are constitutive means, and a structural universal is necessarily connected to the universals it involves because an end is only achieved when its constitutive means are achieved as well. According to Classical Platonism, the involvement relation is that of constitutive means.38

Intuitively, constitutive means can be thought of as steps in a procedure that, logically, cannot be skipped. Our example will be the procedure of COUNTING FROM ONE TO TEN, with respect to the steps of COUNTING FROM FIVE THROUGH SEVEN.

First, there are lots of ways to count from to ten: one can vocalize the words, “one, two, three...” or write them; one can have a machine do the counting or one can read the words “one, two three...” off of a page. There are many different ways to count from one to ten. Each of these ways, in turn, consists in different steps. When counting from one to ten verbally in English, for instance, one of the steps is pronouncing the word “one,” and another is verbally pronouncing the word “two,” and so on.

There are a myriad of ways to count to ten, but no matter how one does it, one cannot successfully count from one to ten without also successfully counting from five through seven. Without counting from five through seven, then, one cannot be counting from one to ten; one would be skipping necessary steps. Counting from five through seven, then, is a kind of logically necessary means for counting from one to ten. No matter what one’s physical technology, in

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38 The view of properties as ends goes back to Plato, and was arguably maintained by Aristotle, for whom essences were teleologically unified: “If we wanted to grasp the species of animals, we should first of all determine the organs which are indispensable to every animal, as for example some organs of sense and the instruments of receiving and digesting food, such as the mouth and the stomach, besides organs of locomotion,” Politics 1290b25-30, emphasis added. On Aristotle and structural universals, see Loux (2006) and Scaltsas (1994).
other words, one cannot logically count from one to ten unless one completes certain intermediate steps.

On the Classical Platonist Account, being involved in a structural universal is just being a necessary step for a certain end. To illustrate, consider again the universal *HOUSE CAT LIFE #17*. According to Classical Platonism, *HOUSE CAT LIFE #17* is something that cats do; it is an end whose achievement makes something a cat with a specific sort of life. Rather than being part of a cat, *HOUSE CAT LIFE #17* is an end.

To answer the question of what involvement is, consider again the end of *HOUSE CAT LIFE #17*. This end is a structural universal. To achieve that end, a cat must achieve certain means, including having four cat legs, having a cat tail, having a cat brain, and so on. Each of these means, in turn, is correlated with a structural universal: *BEING A LEFT CAT FORELEG*, *BEING A CAT TAIL*, *BEING A CAT BRAIN*, and so on. The cat achieves the means to *CAT LIFE #17* exactly when its parts achieve the ends of *BEING A LEFT CAT FORELEG* and the like. The relationship of involvement, therefore, is that of being a constitutive means, or a means whose achievement just is part of the end’s achievement. *BEING A CAT BRAIN* is among the constitutive means to achieving *CAT-HOOD*; *CAT-HOOD* is the constitutive end of *BEING A CAT TAIL*, *BEING A CAT BRAIN*, and the like.

Critics may suspect that the difference between treating properties as ends and treating them as something else--parts, say--is merely verbal, but this is not so. By treating the involvement relation as the teleological relation between means and ends, Classical Platonism avoids all the problems faced by the standard solutions. Here’s how.
6.7. Multiple Involvement.

First, because an achievement can consist in the same step being taken several times, and even several times at once, Classical Platonism has no problem with a structural universal involving another universal several times. Our ordinary, intuitive notion of a part does not allow a whole to have one and the same part several times simultaneously. Yet our ordinary notion of an end allows for an end to require the same step several times simultaneously. In this respect, the notion of an end is very unlike that of a part. It is built in to the notion of an end that it can require the same step several times.

If an argument is wanted for the previous point, consider the following. Suppose that, instead of wanting to sing *Three Blind Mice* in a round, as it is normally sung, we wanted to sing it in stereo. What we want, in other words, is for multiple voices to sing *Three Blind Mice* at the same time, instead of in overlapping sequence. Our end is to sing *Three Blind Mice* in stereo, and the means to achieving this end is to sing the melody of *Three Blind Mice*. However, to sing in stereo, it is not enough for the melody to be sung once; it has to be sung several times. Furthermore, it cannot be sung several times at different times; it has to be sung several times at the same time. So we have one and the same end--namely, singing *Three Blind Mice* in stereo--and it requires the same means several times at once, namely singing the melody. In so doing it does not violate our ordinary notion of an end. For an end to require one and the same step several times at once is not absurd; it is common. A whole cannot have a part several times at once, but an end can require the same means several times at once. For this reason, teleological theories of universals avoid problems that beset mereological accounts of involvement.

Classical Platonism avoids commitments to atomism because, as we know from thinking about Zeno’s “Achilles and the Tortoise” case, it is possible to achieve ends with infinitely many steps. In order for Achilles to reach the tortoise, he has to cross half the distance between them, and then half of the remaining difference, and half of that... Yet somehow he reaches the tortoise anyway. Similarly, achieving the end of METHANE might also require an infinite number of steps, each of which is the instantiation of a more fundamental sort of particle. An account of involvement avoids atomism just in case it allows for infinite chains of it. Classical Platonism defines involvement in terms of the means-end relation, and allows for infinite chains between means and ends. So unlike the Linguistic Account, Classical Platonism avoids atomism.


Finally, the problem with relational accounts of involvement (as well as with variants that appeal to relational properties) is that they treat organisms as mere configurations of their parts. Classical Platonism does not categorize organisms this way. Instead, it treats organisms as sustained achievements that have ends of their own, like health, and treats the lives of such organisms as ongoing, goal-directed processes.

A cat that achieves CATLIFE #17, and this achievement, like the achievement of any organismic structure, takes time: in the first stages of living CATLIFE #17, a zygote of felis catus begins to develop. Later stages involve a kitten’s birth, its development into adulthood, and finally death. Once the cat dies, it stops achieving CATLIFE #17.
Ends may themselves have ends, and organisms, which are living achievements, invariably do. Cats, which are achievements of the Form of the Cat, have the goal of being maximally happy and healthy in the way proper to cats. Dragonflies, which are achievements of The Form of the Dragonfly, have the goal of being maximally happy and healthy in the way proper to dragonflies. And so on. Organismic structures have instances that aim at species-specific health and happiness.

Because organismic structures like *HOUSE CAT LIFE #17* take time to instantiate, and because their instances have ends of their own, it follows that organisms like cats are *ongoing, goal-directed achievements*, which, over the course of a life, aim to flourish and do well. They need not be reduced to configurations of parts, as relational accounts require.\(^{39}\)

Relational accounts of *involvement* identify the well-being of an organism with the well-being of its parts, which allows organisms to be perfectly well-off in Nozickean pleasure machines. Classical Platonism does not treat organisms as configurations of their parts, however, so there is no need to admit that a cat in a Nozickean pleasure machine is perfectly well-off. So the Classical Platonist solution to the problem of structural universals is superior to its competitors.

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\(^{39}\) Because organisms exhibit goal-directed behavior, and because they are often classified by the goal-directed behavior they exhibit, it is tempting to identify organismic structural universals with the structure of their flourishing or well-being. Thus, Aristotle famously identified an animal’s essence with its species-specific mode of happiness. On such an account, *cat-hood* is the same thing as *perfect cat health*, and individual cats are living attempts to realize it. Similarly, Aristotle famously identifies the human essence with *eudaimonia* or human happiness, treating human beings as living attempts to achieve it.
7. Sets of Determinants Complete the Classical Platonist Theory of Properties

Plato has often been criticized for assigning too much work to too few entities. His theory of the Forms is allegedly deficient because it requires the Forms to not only serve as the semantic values for proper functions, but to also for *properties in general*, regardless of whether their instantiation is the performance of a proper function. And so young Socrates is embarrassed when asked about the Forms of mud, dirt, and hair; for how can entities which serve as *standards of perfection* also serve as features of things which appear to *have* no such standards? There is no such thing as *perfect mud*, after all. “That is because you are inexperienced,” replies the *Parmenides*’ eponymous interlocutor. His rebuke is echoed in more recent years in Armstrong’s canonical study, as well as in other technical appraisals of Plato’s metaphysics. To the extent that Plato’s theory of the Forms is known to contemporary metaphysicians, it is rejected for its reputed failure to play these two roles.

But don’t believe the hype. Plato’s theory of the Forms, when correctly elaborated, can perform both roles perfectly well. For not only are the Forms suited to play the role of proper functions; but so are *sets of Platonic Determinants* well-suited to provide a theory of properties generally.

To see why, it is sufficient to note that Platonic Determinants are, for most intents and purposes, like Lewis’ *possibilia*, save that they are abstract rather than concrete--that is, they lack a spatial location rather than have one--and that consequently, they are not naturally grouped into *worlds* under spatial relations. Yet Classical Platonism admits a multitude of *maximally specific ways to live a cat life*, each of which is like a *possible cat*.

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40 Armstrong (1978), vol. 2.
By taking sets of Determinants as the referents of ordinary predicates, and by analyzing the resemblance of properties in terms of the resemblance of Determinants, the Classical Platonist has the same resources for a theory of properties as a Lewisian modal realist. To see why, just consider a few phrases that involve quantification over properties: “Being a tabby cat is fun”, “red resembles orange more than red resembles blue”, and “there are just four fundamental physical forces.”

On a Classical Platonist metaphysic, the analyses of such sentences are clear. “Being a tabby cat is fun” is true just in case every (contextually relevant) Determinant of the Cat Form that has TABBYNESS as a constitutive means also has BEING FUN as a constitutive means.

“Red resembles orange more than red resembles blue” is true just in case for any Determinant, D1, such that D1 that involves REDNESS: and for any determinant, D2, that involves BLUENESS; there is some determinant D3, which is such that D3 both involves ORANGE and resembles D1 more than D2 does.

Finally, “there are just four fundamental forces” is true just in case there are only four constitutive means--M1, M2, M3, and M4--which are such that any Determinant that involves the constitutive means of BEING A FUNDAMENTAL FORCE also involves either M1, M2, M3, or M4.
4 Objections to Classical Platonism

By identifying metaphysical priority with functional teleology, Classical Platonism accrues several objections. There is the charge that Classical Platonism precludes the possibility of mutual teleological dependence; that Classical Platonism includes nonexistent objects among its primary substances; that Classical Platonism is incompatible with scientific realism; that teleological facts are reducible in a way that falsifies Classical Platonism; that teleological facts are contingent in a way that falsifies Classical Platonism; and that Classical Platonism requires matter to have a purpose, without being able to say how. This chapter’s purpose is to nullify such objections.

1. The Circularity Objection

The Circularity Objection purports to show that teleological and metaphysical dependence are distinct, since the former permits, and the latter forbids, circular chains of dependence. A cat’s organs, for instance, work for the sake of the whole cat’s health; the whole cat, in turn, maintains the health of its organs. A government works for the sake of its citizenry; the citizenry, in turn, work for the sake of the government. Circles of teleological dependence are common. Circles of metaphysical dependence are impossible. So much the worse for Classical Platonism, goes the objection, since it identifies them.
To see how the Classical Platonist avoids the Circularity Argument, remember that teleological idioms like “in order to” and “for the sake of” are ambiguous. Sometimes they suggest that a thing’s end is a kind of process or achievement—e.g. “the kidney exists for the sake of filtering the blood” or “the broom exists for the sake of sweeping floors.” At other times they suggest that a thing’s final cause is the beneficiary of such processes—e.g. “the kidney exists for the sake of the organism’s health” and “the broom exists for the sake of people who need floors swept.” Since teleological language is ambiguous between achievements and beneficiaries, it is easy to confuse them.

The Classical Platonist can avoid the Circularity Argument in two steps. First, by only identifying metaphysical priority with the achievement-based sort of teleology, and not with the beneficiary-based sort; and second, by pointing out that the achievement-based sort of teleology does not permit circularity, as the beneficiary-based sort does. A cat’s kidney works so as to benefit the cat, and the cat works so as to benefit the kidney. Yet it is the kidney’s sole purpose to benefit the cat; it is not the cat’s sole purpose to benefit the kidney. A state’s sole purpose is to benefit the citizenry; importantly, it is not the citizenry’s sole purpose to benefit the state. Because there is a kind of teleological dependence that avoids circularity, and because the Classical Platonist identifies metaphysical priority with it, Classical Platonism avoids the Circularity Argument.

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1 See chapter 3, §1.
2. The Nonexistence Objection

The Nonexistence Objection is that, because an object can exist for the sake of something else that does not—as the United Nations might exist for the sake of world peace, even though there is no world peace, and as cats exist for the sake of perfect cat-health, even though there is no perfect cat health—Classical Platonism, which identifies the “for the sake of” relation with metaphysical dependence, entails that the United Nations and cats are metaphysically dependent on what does not exist, which is absurd.

The Nonexistence Argument can be avoided by stressing the distinction between an existing abstract object and a nonexistent object. Nonexistent objects, to the extent they can be sensibly discussed at all, include a kaleidoscopic array of disorderly characters: not just unicorns, round squares, and pairs of even primes, but also round squares that are neither round nor square, unicorns that are pairs of even primes, and worse. Of all the creatures in Cirque du Métaphysique, nonexistent objects are the most beastly and worst behaved. Fortunately, the Classical Platonist eschews them.

The Classical Platonist’s primary substances are Forms, which, among other things, are abstract in the sense that they have no location in space or time. Peace, justice, perfect cat-health, and the like are not nonexistent; they are abstract. You cannot poke a Platonic Form with a stick or hide behind one, but for all that they still exist. World peace may fail to be realized, but this does not make it nonexistent; it just makes it uninstantiated. Similarly, cats may fail to ever achieve perfect health, but this does not mean that there is no such thing as perfect cat-health; it just means that there are no instances of it. For the Classical Platonist, ideal states are not
nonexistent--on the contrary, they are fundamental! The Nonexistence Argument, like the Circularity Argument, is easily answered.
3. The Respectability Objection

The *Respectably Objection* purports to show that Classical Platonism turns ontology into a field that is not intellectually respectable, in the sense that it is incompatible with *naturalism*. Put formally, the argument is the following:

a. Ontology is an intellectually respectable enterprise.

b. If ontology requires the rejection of naturalism, ontology is not an intellectually respectable enterprise.

c. If Classical Platonism is true, ontology requires the rejection of naturalism.

d. So Classical Platonism is not true.

The argument is clearly valid. Its soundness depends on what the sense Classical Platonism is incompatible with naturalism. We will begin by distinguishing two views that could be called “naturalism.”

First, one might use “naturalism” to name the view that *everything exists in space-time*, or that everything has a spatiotemporal location.² Call this view *metaphysical naturalism*. Metaphysical naturalism might also be called “concretism,” since it is the denial of abstract entities.

The other contender for the title of “naturalism” is the view that *ontology cannot neglect science’s posits or contradict scientific claims with philosophical arguments*. Call this *scientific naturalism*. Scientific naturalism is a very modest view. It is *not* the Quinean view that

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² The term “naturalism” has most famously been used this way by Armstrong (1978) and Plantinga (1978).
philosophers should “let total science decide” ontological questions, or that ontology can be read off of science.\(^3\) Rather, it is Davidson’s view that “philosophy does not take hostage to empirical fortune.” It is the view, in other words, that one’s ontology must account for scientific posits somehow, either as primary substances or else as dependent ones. It does not require scientific entities to be primary substances. Ontology cannot contradict science, and must acknowledge science’s posits. But it need not itself be part of the sciences for scientific naturalism to be true, nor must it defer to science to settle ontological matters.

Having distinguished naturalism’s metaphysical and scientific versions, it is easy to see that the Respectability Argument equivocates between them. First, look at (b). If “naturalism” in (b) means scientific naturalism, then (b) is true. Scientific discoveries indeed inform us about the world’s contents, and they should consequently affect one’s ontology—even if there is more to the ontology than scientific posits. An ontology that took no account of science’s posits would lose respectability. Taken as a claim about scientific naturalism, (b) is true.

If, however, the naturalism mentioned in (b) is metaphysical naturalism, its truth is far from obvious. In fact, it looks false. Consider a circumstance in which science discovers the existence of non-spatial entities. Then (b)’s metaphysical interpretation would require ontology to disagree with science. Metaphysical naturalism, in other words, licenses science from the armchair. To harbor medieval nominalist prejudices despite what science might tell us is not respectable, even if--per impossible!--nominalism were true. It is much better instead to be a realist about scientific methods, agreeing to countenance whatever they do. Taken as a claim about scientific naturalism, (b) is true; taken as a claim about metaphysical naturalism, (b) is

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\(^3\) Quine (1948).
false.

The opposite is true of premise (c), which is true only if taken as a claim about metaphysical, rather than scientific, naturalism. Taken as a claim about metaphysical naturalism, (c) is obviously true. The Good does not have a spatial location, nor do any of the other Forms. A Classical Platonist’s primary substances are all non-spatial. She thereby rejects metaphysical naturalism.

But must the Classical Platonist reject scientific naturalism? No! On the contrary, Classical Platonists are often better able to account for many scientific posits. Frictionless surfaces, perfect circles, unachievable speeds, numbers, and all the denizens of such models readily find home in a Platonic heaven. Classical Platonists have no problem with scientific realism; they can accept all of science’s posits, as well as cede authority where it is due. What she refuses to accommodate is the restriction of ontology to space-time. As a claim about scientific naturalism, (c) is false.

So Classical Platonism does not require ontology to abandon science, and can even accommodate science’s posits. In this, it is a respectable discipline. It commits itself to abstracta from the outset, but it does so with the requirement of realism about scientific posits. Classical Platonism is not anti-scientific or unscientific; it can avoid the Respectability Argument.

4 The term “in a Platonic heaven” is obviously metaphorical; Forms have no location, no matter how heavenly. Armstrong (1989), pp.76 is therefore mistaken to write, “Once you have uninstantiated universals, you need somewhere special to put them, a ‘Platonic heaven,’ as philosophers often say.”
4. The Problem of Matter

The greatest objection to Classical Platonism is its apparent inability to account for the *proper function of matter*. Because Classical Platonism requires everything to have a proper function (with the exception of the Good), it requires matter to have a proper function too. Yet matter does not seem to have a proper function. Mud, dirt, and lonely asteroids do not seem to be *for* anything; they appear purposeless. Since matter does not appear to have a proper function, and since Classical Platonism requires it to, it appears that Classical Platonism is false. The greatest objection to Classical Platonism, then, is that it cannot account for the proper function of matter. Call this the *Matter Problem for Classical Platonism* (henceforth the Matter Problem).

For the Classical Platonist to solve the Matter Problem, she must show that matter has a proper function, and there are only three strategies for doing this. She could be a *Creationist*, and argue that the material world is an artifact; she could be a *Hylarchist*, and argue that the material world is an organism; or she could accept Deep Ecology, and argue that the material world is a natural habitat. A survey of the options reveals the third to be the most plausible and the most modest in its commitments. Other things being equal, Classical Platonists should accept Deep Ecology. Let us compare the options.

4.1 Creationism

Creationism holds that the world is an artifact--usually but not necessarily of divine origin--which is so intricately designed, and made with intentions so specific, that even mud, dirt, and lonely asteroids have purposes within it. Creationism responds to the Matter Problem,
then, by asserting that matter has *artifactual* teleology--i.e. that it has a proper function because it was *designed*.

Historically, Creationism has been the most popular response to the Matter Problem, but for three simple reasons, I find its popularity to be inversely proportionate to its plausibility. First, there are great dissimilarities between the physical universe and a machine; second, creationism requires an otherwise unmotivated commitment to a *demiurge* or to *demiurges*; and third, creationism raises the question of the demiurge(s)’s *intentions*--a subject whose investigation is more mysterious than that of how matter could even have a purpose to begin with. Creationism therefore raises worse problems than the one it purports to solve. After briefly reviewing the objections to Creationism, we will turn to its competitors.

The first objection to Creationism is that physical objects in the universe, unlike the parts of a machine, do not appear to work *together*. If the cosmos were an artifact, we would expect its purposive behavior would be more cooperative and unified than it actually is. The individual gears and springs of a watch do not strive to annihilate one another or compete for resources, but living things are constantly in such competition. Nor do any parts of a watch sit idly by, but many bits of matter appear completely idle. An artifact’s parts *cooperate* when they perform their
proper functions, but the world’s parts do not. So the world is not an artifact; Creationism is false.\footnote{Against the world’s apparent lack of cooperation, one might argue that our view of its parts is insufficiently small, or our exposure to them insufficiently brief, or our cognitive capacities too limited in some way to clearly grasp nature’s unity. The problem with this response is that it undermines Creationism’s original motivation. Creationism begins with the idea that life aims at perfection, and explains this apparent fact by likening the world to a machine, whose parts are directed to purposive behavior. If it then turns out that the world does not resemble a machine, this is evidence against the world’s being an artifact. To emphasize our epistemic limitations is to admit that our world fails to resemble a machine in some respect—that it fails to resemble a machine up close, or within a brief duration, or from a certain perspective. So emphasizing our epistemic limitations is a way of pointing to dissimilarities between the universe and a machine. It is to provide evidence against Creationism, in other words. The Creationist cannot account for the world’s apparent lack of cooperation by emphasizing our epistemic limitations.}

A Creationist might respond to the apparent lack of cooperation by arguing that the universe is a \textit{special} artifact—one whose parts are \textit{supposed} to conflict or to remain idle. There are such artifacts, of course: gardens and ant farms are among them, as well as orchestrated battles and scenes of deliberate violence. Such a response, however, only strengthens the third objection to Creationism, which is the problem of finding evidence for the universe’s designer’s intentions. We will turn to this objection shortly, along with the prospects for “battlefield” ontologies. Ultimately, the world’s uncooperative character is a serious problem for Creationism.

The second objection to Creationism is that by identifying the physical world with an artifact, the creationist accrues an otherwise unmotivated commitment to the existence of a \textit{demiurge}, or to demiurges. Such commitments are germane to anthropomorphic theism, but our current focus on the Matter Problem; and in the context of solving the Matter Problem, there is no reason to jump to an anthropomorphic theism any more than there is to jump to Hylarchist theism or mysticism. For the cosmos contains no clear, uncontroversial signs of artisanship: no signature of the artisan, no omnipresent voice announcing its designs, nor any other signal from a cosmic creator. There is no decisive evidence for a demiurge, and the natural teleology that
Creationism purports to explain through its commitment to one does not warrant Creationism any more than it warrants Hylarchism or Deep Ecology.

Third, and finally, the world can be an artifact only if it is supposed to perform a specific function or functions, and it is unclear what its function could be. *Pace* Paley, it is unlikely that our universe is anything like a gigantic timepiece, and *pace* Schopenhauer, it is unlikely that it is torture device. So what, then, is it? Is it a gift from one demiurge to another? Is it a competitive game between demiurges? Or is it a theatrical production, as Shakespeare’s Jacques muses in *As You Like It* and Poe’s narrator laments in “The Conqueror Worm”? Just what, exactly, is the world supposed to do?

Assuming that an artifact’s purpose can be traced to its designer’s intentions, the question of the world’s purpose becomes, for the Creationist, a question about the beliefs of supernatural agents. The fact that Creationism replaces the Matter Problem with something so occult is a problem for Creationism. For on what scientific or philosophical basis could one hope to advance the investigation into past beliefs of invisible super-persons? What would the intentions of our demiurge(s) be?

It seems particularly unwarranted to think of the world as a weapon, a torture device, or an scene of divinely orchestrated violence, for there is little if any value in such things. Since there is little if any value in such things, there is little if any reason for a demiurge to make them--no reason, anyway, that is not buttressed by ridiculous fantasies about warring spirits or evil demons. One could believe, of course, that the world was designed as a battlefield for supernatural forces of good and evil, or a painful test for separating good organisms from bad ones, but absent the incredible amount of miraculous evidence needed to substantiate such
fantasies, there is no reason for doing so. The intentions of a cosmic demiurge is already a mysterious affair; there is no need to compound the mystery by adding a cartoon mythology to it. It is absurd to think that the world is designed as a weapon or scene of violence.

If we adhere to the idea that life aims at perfection, it would seem natural for the Creationist to identify the world with an artificial wildlife preserve or zoo. As we will see, this proposal is similar to the Deep Ecologist’s, differing only in its ontological extravagance. Like the Creationist, the Deep Ecologist thinks that the universe is supposed to support life. Unlike the Creationist, however, the Deep Ecologist makes no commitment to a demiurge, and she denies that the world is an artifact. So other things being equal, the most natural Creationist response to the Matter Problem is an unnecessarily complicated version of Deep Ecology. I take this as a strong argument for Deep Ecology over Creationism. Before turning to Deep Ecology, however, we must assess the Hylarchist response to the Matter Problem.

4.2 Hylarchism

In the sixth chapter of Hume’s Dialogues, the character Demea reminds us that something can have a purpose by being alive as well as by being designed, which means that the world can have a purpose if it is an organism. He then elucidates an alternative to Creationism, which, he claims, “was maintained by almost all the theists of antiquity, and chiefly prevails in their discourses and readings”:

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6 More specifically, the universe is de re supposed to support life. Not only is it supposed to be the case that the universe supports life, in other words; the universe is also such that it has the proper function of supporting life. See chapter 3, §2.

7 Hume, Dialogues, VI.
Now, if we survey the universe, so far as it falls under our knowledge, it bears a great resemblance to an animal or an organized body, and seems actuated with a like principle of life and motion. A continual circulation of matter in it produces no disorder; a continual waste in every part is incessantly repaired: The closest sympathy is perceived throughout the entire system: And each part or member, in performing its proper offices, operates both to its own preservation and to that of the whole. The world, therefore, I infer, is an animal; and the Deity is the *Soul* of the world, actuating it, and actuated by it.⁸

Demea’s alternative holds that nature is an *organism* rather than an artifact, and that, if there is a supreme God, it is nature’s *soul* rather than its artisan. The “theists of antiquity” to whom he alludes—including Plato,⁹ Aristotle,¹⁰ Plotinus,¹¹ Julian,¹² Sallustius,¹³ Olympiodous,¹⁴ Proclus,¹⁵ Simplicius,¹⁶ and, by ancient reports, the Stoics¹⁷--had no single name for this view, though Leibniz, while disputing it centuries later, referred to its posit as a “hylarchic principle”¹⁸ and we may as well let the name stick. *Hylarchism* is the thesis that the world is an organism.

Like Creationism, Hylarchism has a strategy for guaranteeing a purpose for matter. Just as sticks and stones are, in a creationist ontology, little cogs and gears of a cosmic artifact, so in a Hylarchist ontology are they cells, blood vessels, and other organs. Just as the orderly movement

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⁸ Ibid.
⁹ *Timaeus* 34a-b, 92c.
¹⁰ *De Caelo* 292a20-22. Compare also *Metaphysics* 1072a26-b1 with *De Anima* 433b10-12.
¹¹ *Enneads* IV.3.4.26-28, V.1.2.20-25, and especially V.1.2.35-42.
¹² *Hymn to Helios*
¹³ *On the Gods and the Universe* 17.3.7.
¹⁴ *Commentary on Aristotle’s Meteorology* 143.15-17.
¹⁵ *Commentary on the Timaeus* I.239.29-240.12.
¹⁷ Diogenes Laertes’ *Lives and Opinions of the Philosophers* 7.142. See also Sellars (2003), pp. 91-107.
of matter is, on a Creationist account, the churning of cosmic machine, so, on a Hylarchist account, is it the *metabolism of a great creature*. Both views, then, can present a response to the Matter Problem. But is the Hylarchist view any better than Creationism?

No. First, the universe is as dissimilar to an organism as it is to a machine; second, the commitment to a cosmic organism is as problematic as that to a demiurge; and finally, the Hylarchist faces a dilemma: either accept *hylozoism*—the doctrine that all matter is alive\(^\text{19}\)—or else claim that the world-organism’s body is *vastly and mostly lifeless*. Again, we will consider the objections in order.

First, because there are just as many dissimilarities between the world and an organism as there are between the world and a machine, Hylarchism faces the same first objection as Creationism. For organisms, like machines, have parts with cooperative proper functions. Unless an organism is injured or diseased, its organs will not function properly by working against one another, nor will they function properly by sitting idly by. Yet the cosmos brims with strife and idleness. If the cosmic organism is injured or diseased, where is the injury, and what is the disease?

The second major objection to Hylarchism is its ontological excess. Just as the existence of a demiurge is so huge a philosophical discovery as to make it a hazardous presupposition, so is the existence of a cosmic organism. There is no contradiction in the idea of a cosmic organism, of course, but there is no decisive evidence in its favor, either. Organisms are supposed to *interact with their environment* in a certain way, which is something the cosmos cannot do; the fact that the cosmos is *all-encompassing* precludes the possibility of it being in *any* kind...

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\(^{19}\) I take the term from Lycan (2007). Compare hylozoism to *panpsychism*, which holds that every material thing has mentation. If, as I believe, life is required for mentation, then panpsychism entails hylozoism.
environment, let alone one it interacts with. Organisms are supposed to be partitioned into different organs, and the world fails to resemble an organism in this respect as well: for where is the cosmos’ heart or lungs? Where is its immune system or its ribosomes? Rather than there being any evidence *for* the existence of a world-organism, there appears to be a great deal of evidence *against* it.

Finally, Hylarchists face a dilemma: either commit to Hylozoism—the doctrine that matter is alive—or else admit that the vast majority of the world’s body is lifeless. Neither option is appealing. To say that the world’s body is mostly lifeless is to make it unlike any organism with which we are familiar. We might try to liken it to a monstrous hermit crab, whose unliving shell is immeasurably--perhaps infinitely--bigger than it. Or an infinitely hirsute Yorkshire terrier, whose miniscule speck of a body is immeasurably dwarfed by its mass of un-living hair. There is no contradiction in the idea of such a beast, but it is so unlike the life with which we are familiar as to raise serious doubts about Hylarchism.

If, however, the Hylarchist chooses to embrace Hylozoism and claim that all matter is alive, she faces the task of justifying Hylozoism. This task appears hopeless. For it certainly does not *seem* like all matter is alive. On the contrary, Hylozoism faces the same three-word objection as its close relative, panpsychism: “what about rocks?” The task of finding independent evidence for Hylozoism would rest on the Hylarchist, and it does not look like a task she can complete.

Because of the dissimilarities between the cosmos and an organism, because of its commitment to a world-organism, and because it faces the aforementioned dilemma over
Hylozoism, Hylarchism is as implausible as Creationism. Rather than looking like an organism and nothing else, the universe appears to be a collection of organisms in a nonliving habitat. Such a claim, however, just is the Deep Ecologist view, depending on what one means by “habitat.” So let us turn, finally, to Deep Ecology.

4.3 Deep Ecology

The teleology of a habitat is best understood by proceeding in two stages, the first of which is to consider the real-life biological phenomenon of gastrolithy. A gastrolith is a nonliving biological organ, specifically a stone or a portion of sand, which is swallowed in order to aid the digestive process. Herbivorous birds, crocodilians, and seals have gastroliths, as did sauropod dinosaurs.

Philosophically, gastroliths are interesting for the following reason: as biological organs, they can function well or poorly; and because they can function well or poorly, there is a sense in which they can be harmed or benefitted, even though they are just bits of rock and sand. Just as dust is bad for pianos, rust is bad for cars, and anything that prevents an object from performing its proper function is bad for it, so are similar disintegrative forces bad for gastroliths. Drinking a certain acid, for instance, might be bad for an emu’s gastroliths, in addition to being bad for the emu itself and the emu’s other organs. Likewise, consuming another chemical might be good for

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20 Hylarchism may not be superior to Creationism as a solution to the Matter Problem, but as Hume’s interlocutors point out, a Hylarchist theology may do better than a Creationist theology. For the former does not require “downward causation” from the immaterial to the material, nor does it require the god to change.

21 Thus Von Wright (1963), pp.50 writes, “It is not unnatural to say that lubrication is beneficial or good for the car, or that violent shocks will do harm to a watch... Therefore that which is good for the car or watch is something that will keep it fit or in good order with a view to serving its purpose well." See also Kraut (2007), §1.1.
an emu’s gastroliths—say, by reinforcing them or increasing the comfort with which they are used. Even though they are made of mere stone, gastroliths can be harmed and benefitted. This does not mean that they can be harmed and benefitted all on their own, of course, but it is compatible with a related idea, which is that a gastrolith without an organism is, like a detached limb, missing from something—that it is an incomplete part of a teleological system. (As we will see, Deep Ecology rests on just such an idea.) Gastroliths demonstrate one way for nonliving matter to be benefitted, harmed, and teleologically dependent on life. As such, they promise a meager but firm “toe-hold” for nonliving matter in the Classical Platonist’s hierarchy.

The second step in understanding the teleology of habitats is to consider the close resemblance between an organism’s use of a gastrolith to digest and its use of a nearby star to see, or between an organism’s use of a gastrolith to digest and its use of wind for propulsion, its use of constellations for navigation, its use of rock hollows for shelter, and, in short, its use of its whole environment to live and flourish. Consider the whole environment, but as an instrument of survival. So considered, an atmosphere is not unlike an gastrolith—albeit one that is outside an organism’s body, which it shares with other living creatures. An atmosphere, like a gastrolith, is a portion of lifeless matter, which certain creatures use to flourish. Just as we may speak of a gastrolith being harmed or benefitted, so may we speak of a planet’s atmosphere, its oceans, and its mountains as being harmed or benefitted as well. The close, biologically important relation borne by gastroliths to their possessors, then, could be borne by an environment to organisms generally. Such environments are habitats: portions of the world, made mostly of nonliving matter, which can be harmed or benefitted relative to its inhabitants in the same way that a gastrolith might be harmed relative to its possessor.
For our purposes, Deep Ecology is the thesis that *the cosmos is a habitat for life*—like a great external gastrolith, shared by all living beings—and that every other possible world is a habitat for life, too. Deep Ecology holds that, just as gastroliths are supposed to facilitate digestion, so is matter supposed to facilitate the flourishing of life; and that a universe *without* any life is *missing from something*, like a gastrolith without its possessor or a detached limb. According to Deep Ecology, a lifeless cosmos is an incomplete part of a teleological hierarchy.

Since the cosmos has been lifeless for most of its past existence, and since it will perhaps be lifeless for most of its future, too, the Deep Ecologist solution to the matter problem entails that the universe is a somewhat sad, failing ecosystem, whose flashes of success and flourishing are meager and immeasurably short-lived. This is not an argument against the Deep Ecologist view, however, any more than the existence of a perpetually sick organism is an argument against the claim that the organism has the proper function of flourishing.

Just as a gastrolith can be benefitted or harmed relative to its role in facilitating digestion, so can an entire cosmos be benefitted and harmed relative to its role in facilitating flourishing. If Deep Ecology is true, then not only is it *good for life* for life to flourish in the cosmos; it is also *good for the cosmos* for life to flourish in the cosmos. Just as it is good for a gastrolith to be used one way and not another, so is it good for the cosmos to have life flourish in it. So Deep Ecology holds that matter functions well by being a natural home for life, or a natural instrument of survival. Like Creationism and Hylarchism, then, Deep Ecology can assign a proper function to matter.

Deep Ecology also dodges the main objections to Creationism and Hylarchism. While Creationism was threatened by the dissimilarities between cosmos and artifact, and Hylarchism
was threatened by the dissimilarities between cosmos and organism, the Deep Ecologist account faces no such hazards. For the cosmos does in fact resemble a habitat. It does resemble a place that ought to support life, even if its actual status as such a place is controversial.

Deep Ecology faces no need to account for the world’s lack of cooperation, since there is no prima facie reason why a habitat of organisms should have to be a habitat of cooperating organisms. Creationism and Hylarchism are threatened by the world’s lack of cooperation, and Deep Ecology is not.

Unlike Creationism and Hylarchism, the Deep Ecologist solution to the Matter Problem does not require an additional commitment to a demiurge or world-organism. Its commitment to a world-habitat, while substantive, is far more modest. The Deep Ecologist suggests that the cosmos is a natural home for life—not because it was designed that way, nor because it is itself alive, but because the well-being of the cosmos is tied up with the well-being of the creatures inhabiting it in the same way that the well-being of a gastrolith is tied up with the well-being of its possessor. If Classical Platonism is true at all, and if no more evidence is relevant to the comparison of the Matter Problem’s three purported solutions, Deep Ecology clearly emerges as the correct one.

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22 The precise nature of this commitment is spelled out in §3.1.
5. Must Proper Functions Have Non-Teleological Bases?

Philosophers commonly think that things have proper functions because they have underlying features that are not themselves proper functions. Thus the broom has the proper function of sweeping because its designer(s) intended for it to sweep; the heart has the proper function of pumping blood because it is the result of certain selection pressures for blood-pumping hearts; and my hand’s waving motion has the proper function of greeting you because of our linguistic community’s innumerable conventions that associate waves with greetings. Philosophers commonly accept the following doctrine, then, which I call the Derivativeness of the Teleological (henceforth DT):

(DT): For any material object $O_1$ and any proper function $F$, if $O_1$ has $F$, then there is a material object $O_2$ and features $G, H, J...$, such that (i) $O_2$ has $G, H, J...$; (ii) $O_1$ has $F$ because $O_2$ has $G, H, J...$; and (iii) none of $G, H, J...$ are proper functions of $O_2$.

As its name suggests, DT holds that descriptions of proper functions have an underlying non-teleological base, and that this base helps to explain why things have the proper functions that they do. Philosophers who accept DT hold that teleological facts are metaphysically dependent on non-teleological facts, and that teleology is not a fundamental feature of the world. DT is therefore an ontological principle; it denies that the world’s most fundamental elements--or at least the world’s most fundamental material elements--have any proper functions.

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23 It is therefore accidental to the spirit of DT that its formulation mentions “features” and “material objects.” One may be a nominalist about features or an eliminativist about material objects and still accept DT in spirit, even if not in letter; one may still deny that proper functions are irreducible features of the world.
To deny DT, conversely, is to hold that there is at least one material object with a proper function that is not explainable in terms of any thing’s non-teleological features. A denial of DT, in other words, entails that some teleological feature of some material object is not reducible to or explainable in terms of the world’s purely descriptive features.

DT is false. Though initially appealing, closer examination shows that DT has little evidence in its favor. The examples usually cited in its defense actually tell against it, and the best arguments for it are inconclusive. Ultimately, DT has less philosophical support than its denial. There is therefore no philosophical impropriety in rejecting it, or in endorsing a research program that begins with its rejection.

5.2. The Usual Examples: Intentions and Natural Selection

When we attempt to think of a proper function’s non-teleological base, we usually think of either an agent’s intentions or a species’ adaptation to selection pressures. When the proper function is artifactual, we usually think of the former. When it is biological, we usually think of the latter. So in explaining why bifocals have the proper function of correcting both near- and far-sighted vision, for instance, or why brooms have the proper function of sweeping, we usually appeal to the intentions of Benjamin Franklin or the intentions of the broom’s inventors; and in explaining why the heart has the proper function of pumping blood, or why the kidney has the proper function of filtering it, we usually appeal to the selection pressures that resulted in hearts and the selection pressures that resulted in kidneys. In explaining the proper functions of artifacts, in other words, we usually appeal to intentions, and in explaining the proper functions
of organs, we usually appeal to selection pressures. Intentions and selection pressures, then, are the usual examples of non-teleological bases for proper functions.

As bases, they seem legitimate. It seems that artifacts have their proper functions at least in part because of their designers’ intentions, and it also seems that biological organs have their proper functions at least in part because they are the result of adaptation to certain selection pressures. Intentions and selection pressures seem to help explain why things have the proper functions that they do. They appear to be bases for proper functions. The further and more important question is: are they really non-teleological? Close examination suggests not. Close examination, in other words, suggests that that the notions of both an intention and a selection pressure are irreducibly purposive notions. Intentions are just certain sorts of ends, and selection pressures are proper parts of larger teleological systems.

Intentions are paradigmatically teleological; intentions are always intentions to do things, in some broad sense of “do” that counts things like thinking and being somewhere as doing something. It is impossible to have an intention, for instance, while not having an intention toward any belief or course of action. To have an intention, it seems, just is to have a belief or a course of action as an end.

Yet this prevents intentions from being proper functions’ non-teleological bases. If intentions are ends, then to appeal to a designer’s intentions in explaining why an artifact has a proper function is not to explain the purposeful in terms of the purposeless, but rather to explain the purpose of one thing by appealing to the purpose of another. It is to explain the teleology of an artifact, in other words, in terms of the teleology of the mental. The explanation may be perfectly good, but it is not reductive; it does not explain away the teleology in terms of anything
else. Rather than citing a non-teleological basis for proper functioning, such an explanation cites another teleological one. Intentions, then, seem teleological in a way that precludes their being non-teleological bases for proper functioning.

Against the claim that intentions are irreducibly teleological, one might point to the wealth of materialist literature in the philosophy of mind, where a variety of attempts have been made to show that the mental is not irreducibly teleological.

Originally, materialist philosophers hypothesized that mental states are simply identical to certain physical states, particularly brain states. Such a view, however—which was later known as “the Identity Theory of Mind”—ran up against the Multiple Realizability Argument, which points out that different physical states—such as the state of a human brain and the state of an octopus brain—could realize the same mental state—such as pain. Since one and the same mental state—pain—can be realized in two different physical states, it cannot be that mental states are numerically identical to the physical states that realize them. Otherwise there would be no difference between human brains and octopus brains. The simplest materialist view of mind, then—the Identity Theory—has come to be used as a foil for further, more complicated varieties of materialism.

The view commonly known as “machine functionalism” or “Turing Machine Functionalism,” for instance, purports to show that material states realize different types of mental states, depending on their causal role. Fodor’s canonical example is worth repeating: what makes something a mousetrap is not its chemical composition or makeup, but rather its role in relation to mice. A mousetrap is much like a mathematical function, which takes free mice as

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24 Place (1956).
input values and yields caught mice as unique outputs for every input.\textsuperscript{25} If we think of the mind as a complicated \textit{collection} of mousetraps, different groups of which are set off in response to different stimuli, we come closer to having an actual, substantive theory of the mind. We also come much closer to the appealing idea that the brain is like a kind of physical \textit{computer}, which runs different “programs” when it realizes different mental states. These programs, in turn, are like collections of mousetraps, which fire or go off in different patterns in response to different stimuli. It is for this reason that machine functionalism is also called “Türing Machine Functionalism,” since a Türing Machine is a simple computer that runs programs by instantiating a \textit{machine table}, which is a complicated series of input and output values. The state of a Türing Machine will function as an input, and will determine what state to realize next. Thus, in Türing Machine Functionalism, we find the thesis that the mind is a physical computer, which realizes different mental states depending on the causal roles played by those states in relation to certain input and output values.

The mind’s “programs,” moreover, are defined in the same way that any mathematical function is defined: by abstract isomorphism. Sober’s example is particularly illustrative: when I add the number one to itself fourteen times, I am executing the same program as is executed on the beach when a new layer of sand is added to the shore once a night for two weeks.\textsuperscript{26} So if Türing Machine Functionalism is correct, a certain mental state \( M \) will be realized in two different systems just in case they bear a sufficiently close structural resemblance. Herein lies the problem.

\textsuperscript{25} Fodor (1968), Sober (1985).
\textsuperscript{26} Sober (1985).
First, the counterexample to sufficiency. Suppose that the entire nation of China has been organized in such a way as to be exactly similar in structure to my brain when it realizes the belief “I want some ice cream.” When I think, “I want some ice cream,” my neurons fire in a certain pattern and distribution. That exact pattern and distribution is realized by Chinese citizens: whenever one of my neurons fires, sending a signal to others, a particular Chinese citizen throws tennis balls at other Chinese citizens, sending simple signals to them. If Turing Machine Functionalism is correct, then my belief that I want ice cream is a certain structure in my brain, which can be realized by the nation of China; and moreover, realizing such a state just is to believe that one wants ice cream. It follows that the entire nation of China could easily be a kind of “hive mind,” believing that it wants ice cream. Yet this is absurd. Structural isomorphism is not sufficient for the sharing of mental states.

Nor is it necessary. For just as two computers can realize the same program in different ways; and just as different people can count to fourteen in different ways, so too can the same mental state be realized by two dissimilar physical states. There is no reason why every mind that thinks of ice cream should instantiate a mathematical structure that is isomorphic to my brain’s when I entertain the thought. Consider a Martian, or an octopus, or some exotic creature whose “hardware,” so to speak, runs the same software as ours, but with very differently structured mechanisms. Structural isomorphism is not necessary for the sharing of mental states, any more than it is sufficient for them.

Discussions of Turing Machine Functionalism gave way to another, more promising view, which is more consonant with Classical Platonism. This is Teleological Functionalism, first

27 Block (1978).

28 Block and Fodor (1972).
Teleological Functionalism holds that mental states are the *proper functions* of physical states, in addition to being connected to certain states’ causal roles. Thus, on a Teleological Functionalist view, my brain realizes the belief, “I want ice cream” just in case my brain is in a certain state, and the proper function of that state is to convey information like the belief that I want ice cream. Likewise for other physical structures. To realize a mental state, it is not sufficient to simply be isomorphic in structure to something else that has the belief; one must also have the *proper function* of realizing that state.

Teleological Functionalism thus avoids Block’s “Nation of China” objection; for no matter how structured, China does not have the proper function of realizing beliefs like mine. It similarly avoids Block and Fodor’s objection that two different systems could realize the same program in different ways. On a Teleological Functionalist view, there is no reason why two different systems could perform the same proper function in very different ways; and so there is no extraneous requirement of structural similarity on systems that realize the same mental states. Teleological Functionalism quickly avoids the standard objections to Türing Machine Functionalism, then.

The main objection to Teleological Functionalism, in fact, lies in its heavy reliance on a notion of *proper functioning*—one which has historically been viewed with suspicion. Defending Teleological Functionalism lies well beyond the scope of this dissertation, but it should be noted that, if its central argument is correct, the notion of proper functioning is just as central to ontology and to the correct theory of properties as it is to the mental. While it is both dialectically

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30 Which is not to say that it *could* not. But for China to acquire such proper functions, it would have to be quite different from how it currently is. See Lycan (1987).
unfair and historically premature to identify Teleological Functionalism as the correct theory, it is nonetheless one of the more sophisticated and plausible contenders in the philosophy of mind, and it is not entirely without warrant for a philosopher to place her bets on it. For as we saw, intentions are *prima facie* teleological.

Since intentions appear to be teleological, it would seem that *natural selection* is the best candidate for teleology’s non-teleological basis. The best prospect for explaining teleology in non-teleological terms, then, is not to cite the intentions of an agent, but to appeal to natural selection and to the notion of *selecting for a trait*. On such a proposal, the reason why something has a proper function--why the heart has the proper function of pumping blood, for instance, or why the kidney has the proper function of filtering it--is that the properties of *having a blood-pumping heart* and *having a blood-filtering kidney* were naturally selected for.

Selection is defined in terms of causing survival and reproductive success: a trait F is *selected for* in a population p exactly when having F causes members of p to survive or reproduce. The best chance of explaining proper functions in terms of a non-teleological base, then, is to appeal to the idea that *having a property can cause survival or reproductive success*.

Natural selection is *intensional* in the sense that it distinguishes traits that are had by exactly the same individuals. It may be true, for instance, that all and only animals with a certain sort of jaw also have a certain sort of chin; yet jaws could be selected for while chins are not, just as jaws can have one proper function while chins have another. Natural selection is intensional,
then, because properties are the things selected for, and properties can be distinct even while having the same instances.\footnote{A brief mention of a standard example is illustrative: the color of a white cue-ball is distinct from the mass of a white cue-ball, even if all and only white objects have a cue-ball’s mass. For the things that the cue-ball can do because of its color, such as blend in with a white background, are different from the things it can do because of its mass, such as depress a scale. Just as it is for the cue-ball, so it is for organisms: there are certain things an organism can do because of its chin, and other things it can do because of its jaw. If having jaws allows an organism to survive or reproduce while having a chin does not, then only jaws will be selected for, even if all and only chinned creatures are jawed ones. By distinguishing properties that have the same instances, natural selection is intensional.}

The notion of selecting for a property is not only intensional, however; it is also teleological. Its teleology is revealed in light of two facts: first, that an organism’s environment necessarily contributes to whether a certain trait causes survival or reproduction; and second, that life-supporting environments have proper functions because they select for traits in a way that supports life. Each point calls for elaboration.

First, in different environments, the same trait can cause either survival or mortality, and either reproductive success or failure. Having stripes can cause survival in striped environments, for instance, but also mortality in solid-colored environments. Likewise, being feathered can cause survival in aerial environments, but mortality in aquatic ones; and being large can cause survival on a veldt, but mortality in a jungle. A trait causes survival or reproductive success \textit{in combination} with its environment. A trait that is selected \textit{for}, then, must be selected for in an environment that is conducive to its possessor’s survival or reproductive success.

This brings us to our second point, which is that by systematically causing certain organisms to survive and reproduce, an environment thereby constitutes part of a \textit{natural habitat}, which exhibits a certain kind of teleology: they can be harmed and they can flourish. Moreover, an organism’s habitat can flourish and be harmed because its inhabitants have adapted to its selection pressures. Such pressures are part of what make the habitat a natural \textit{home} for the
creatures that dwell in it, and a home functions well by allowing its inhabitants to flourish. A natural habitat flourishes, or is doing well, then, when it supports the overall flourishing of its inhabitants; and it is harmed when it is prevented from supporting its inhabitants in this way.

As an example, consider the Rocky Mountains, which are a natural habitat for a variety of organisms. If someone were to fill the Rockies’ topsoil with carcinogens, or if natural forces produced a sudden ice age over North America, this would harm the Rockies. Not only would it harm the organisms who are living on the Rockies, but it would also harm the whole habitat, which includes the topsoil, fresh air, water, sunlight, and ozone, among other things. Freezing the Rockies’ topsoil or artificially filling it with carcinogens harms the Rocky Mountains: not just by harming individual organisms on the Rockies, but also by disrupting the whole network of supports for Rocky Mountain wildlife. Freezing or poisoning the Rockies harms them; it harms the Rockies as a whole habitat.

To see why, consider a situation in which the Rockies’ topsoil has just frozen, but in which the frost has not yet affected the wildlife. The wildlife are just about to be affected, but in the meantime they are still happy and healthy. Now ask: when the topsoil freezes, does this harm the natural habitat? It seems so. Freezing the topsoil still damages the network of supports for Rocky Mountain wildlife, and the biotic community as a whole. So the fact that the Rockies’ inhabitants have not been harmed yet does not tell against the harms being done to their habitat in the meantime. When the topsoil first freezes, the Rockies are harmed before their inhabitants. This shows that harm to a natural habitat is distinct from harm to its inhabitants.

One might counter that in such a case, the Rockies are only harmed because their inhabitants will be; but this response can be met by imagining that an asteroid demolishes the
Rockies as soon as the topsoil freezes, so that the wildlife is obliterated before being affected by the frost. In the asteroid case, the frost still harms the Rockies, and it still disrupts a network of supports for Rocky Mountain wildlife. Yet the climate change never harms the wildlife, which is demolished by an asteroid instead. As a natural habitat, then, the Rocky Mountains can be harmed independently of their inhabitants.

There is nothing special about the Rockies in this respect, however. What is true of the Rockies is true of any natural habitat, namely that natural habitats can be harmed, and these harms are separate from the harms that might befall their inhabitants. Again, this is not because mountains are alive or have feelings. It is because living beings have adapted to mountainous conditions, and because they now collectively depend on the mountains to exist. The mountains are part of a system of natural selection, in other words, and because they are part of a system of natural selection they are also part of a highly selective life-support system--one that preserves organisms with heritable, mountain-fit traits. To such inhabitants, the Rocky Mountains are a natural home. Habitats can be harmed, then, because biotic communities depend so crucially on them to exist. Because selection pressures are components of natural habitats, they are components of natural homes. To select for a trait, in other words, is to be part of a system that functions well by supporting, in a certain way, the life that has it. Natural habitats function well, in other words, by supporting the life whose traits they select for, and they function poorly--or are harmed--when they do otherwise.

Readers who are familiar with ecology will know that natural habitats are constantly undergoing sudden, massive changes, however; and that many of their effects are just as drastic and disastrous as we might expect from a sudden North American ice age or from the addition of
carcinogens to Rocky Mountain topsoil. Natural habitats are constantly undergoing changes that are difficult to distinguish from harms, in other words, and so the idea that natural habitats can be harmed at all would appear to entail that they are also *constantly* being harmed.

Such a result is not disastrous, however. It *would* be, if it showed that the standards of health or well-being for natural habitats were arbitrary, or if it showed that no meaningful standards of harm can be applied to habitats. But this *doctrine of constant habitative harm*, as we might call it, does not show these things. Rather, it raises the question of natural habitats’ precise conditions of well-being.

A natural habitat contains ecological *niches*--that is, sets of conditions that facilitate certain uses of certain heritable traits to survive--and these niches, in turn, can be *filled*--that is, occupied by creatures that survive by using such traits. We may say that a natural habitat is *harmed* to the extent that either its ecological niches or its niches’ occupants are removed, and *benefitted* to the extent that new niches are produced and occupied while preserving the occupation of existing niches. The fact that natural habitats are constantly undergoing harms can be explained, then, by pointing to the fact that destroying one ecological niche may lead to the production of others, just as the removal of occupants from one niche may lead to its occupation by other creatures. Just as an ice age harms a natural habitat by demolishing whole populations and their ecological niches, so is the natural habitat also benefitted by the ensuing production and occupation of new tundra-bound ecological niches. We face no contradiction or absurdity in the fact that an ice age simultaneously harms and benefits a particular habitat; for the specification of effects on different niches and populations is sufficient to distinguish the various *ways* in which a habitat may be harmed and benefitted. A natural habitat may be harmed when it ceases to be able
to support amphibians, or creatures without fatty tissue, for instance, but be benefitted by
acquiring the ability to support creatures of other sorts.

We should expect there to be a vast multitude of ways in which a habitat could be harmed
or benefitted, then, which correspond to the multitude of different sorts of organisms that a
natural habitat might have niches for. Since natural habitats seem to be harmed when they lose
the capacity to support life, and since they seem to be benefitted when their support of life is
facilitated, the fact that there are different kinds of life, which flourish under different sorts of
conditions, implies that there are different ways for habitats to be harmed and benefitted. Talk of
ecological niches and their occupants assists us, therefore, in identifying these various ways.

Returning to the question of proper functions’ non-teleological base, we find a strong
case to be made against the idea that selection pressures are non-teleological. To explain the
heart’s proper function by appealing to selection pressures is to derive the heart’s proper function
from its place in a larger teleological system--a natural habitat. This habitat functions well, or is
well off, by supporting chordates under certain conditions. To explain biological proper
functioning in terms of selection pressures, then, is not to explain the teleological in terms of the
non-teleological, nor to explain the purposeful in terms of the purposeless. Rather, it is like
explaining an artifact’s proper function by citing its designer’s intentions. It is to explain one
kind of teleology--the proper functioning of an organ--by appealing to another kind of
teleology--the proper functioning of a natural habitat. Selection pressures, like intentions, lay a
very dubious claim to being free of purpose.

It appears that the usual examples fail to establish DT. Far from being non-teleological,
both intentions and selection pressures appear to be quite teleological themselves. For an
intention just is a practical end, and a selection pressure just is a certain feature of a natural habitat. Neither intentions nor selection pressures appear free of teleology. If teleology has a non-teleological basis, it must like elsewhere.

5.2 The Contingency Argument for DT, and the Heat-Death Counter-Argument

One need not appeal to the usual examples in defending DT. One may also appeal to metaphysical arguments. Consider the following, for instance, which we will call the Contingency Argument for DT:

e. It is not necessary that the world contains objects with proper functions.

f. If it is not necessary that the world contains objects with proper functions, then the world’s most basic elements neither have nor are proper functions.

g. If the world’s most basic elements neither have nor are proper functions, then DT is true.

h. So DT is true.

The Contingency Argument is clearly valid; its soundness, therefore, turns on whether its premises are true. As we will see, premise (f) is false. For the fact that it is contingent whether the world’s occupants have proper functions exist does not imply that the world’s most basic elements lack a proper function, or even that its most basic material elements lack one. On the contrary, one may easily hold that the cosmos as a whole is the world’s most basic element, and that it has the proper function of being a natural habitat. Before elaborating on exactly which
way this is, however, it would be worth our attention to examine the Contingency Argument’s other controversial premise.

Premise (g) states that, if the world’s most fundamental elements neither are nor have proper functions, then ascriptions of proper functions are to be explained in terms of ascriptions of other properties, which are not proper functions. Though complicated, this principle should have a great deal of intuitive force when understood. For what it assumes is that the fundamental facts explain the non-fundamental facts. It states that, since the fundamental elements are non-teleological, ascriptions of proper functions must be explained in terms of non-teleological ascriptions. This would only seem true if we were antecedently supposing that ascriptions of teleology are to be explained in terms of the world’s most fundamental elements. Since these elements lack teleology, it follows that ascriptions of proper functions are explained in terms of other, non-teleological facts. In other words, DT.

To the extent that one accepts any notion of fundamentality, one should accept the idea that the non-fundamental is somehow explained in terms of the fundamental. Without that, there is little meaning in describing anything as fundamental. Since the fundamental facts explain the non-fundamental facts, then the non-fundamentality of proper function ascriptions requires their ascriptions to be explained in terms of non-teleological facts. Premise (g) is therefore true; if the primary substances neither have nor are proper functions, DT follows.

As previously mentioned, premise (f) is in fact the weak link in the Contingency Argument’s dialectical chain; it is weak, however, in two related respects. First, it presupposes that the whole cosmos itself is not the world’s most basic element. If the whole cosmos were the world’s most basic element--or if the whole cosmos were at least the most basic among material
objects—it would be possible for the universe’s most basic element to have a proper function 
*even though* it is contingent whether any of its contents have proper functions. The whole 
cosmos might have had a proper function all on its own, while containing only functionless 
things, in other words.

The second weakness of (f) lies in the fact that there is independent evidence for 
asccribing organismic teleology—like that of a natural habitat—to the cosmos as a whole. The 
following argument, which we will call the *Heat-Death Argument*, shows that the universe 
exhibits the same kind of organismic teleology as a natural habitat does:

i. In the same way that it is bad for Rocky Mountain wildlife for the Rocky Mountains to 
undergo an ice age, so is it bad for the universe’s inhabitants for the universe to undergo a 
heat-death.

j. If (e), then it is possible for the universe to be harmed.

k. So it is possible for the universe to be harmed.

The Heat-Death argument is certainly valid, with premises (i) and (j) doing an equal amount of 
the dialectical work. Premise (i) states that there is a close similarity between the way that an ice-
age would harm Rocky Mountain wildlife and the way that the universe’s heat-death would harm 
life in the universe. They resemble in at least this much: that both would be sites where life is 
harmed. The point of interest, though, is whether the universe’s heat-death would harm life both 
directly *and* by damaging a nonliving network of *life supports*. If so, then there would be reason 
to say that the universe *itself* is harmed by its heat-death, in the same way that the Rockies
themselves are harmed by the ice age. There would be reason, in other words, to treat the universe as an enormous natural habitat, and its heat-death as a harm to it.

Would the universe’s heat-death consist in any damage to life supports in addition to damaging life? It would seem so. Stars, as far as we know, are necessary for the existence of any life or natural habitat that conforms to our laws of nature. Our sun is famously such a star; other stars are, in a sense, natural suns. Like oases in a cosmic desert, they produce nonliving resources that life needs, such as heat and light. These very things are often lethal to life, as is the radiation stars emit. Nonetheless, stars are necessary for natural habitats and for life as we know it, and necessary for planetary biospheres like our own. Any damage to them, whether natural or artificial, would be a harm to the natural habitat(s) of which they are parts. A cosmic heat-death is such a harm, albeit a natural and perhaps physically necessary one. So a cosmic heat-death harms the natural habitat(s) of which stars are parts.

Our sun is part of our natural habitat, just as other stars are parts of any natural habitats they support. Yet the stars are also parts of a larger whole, which a cosmic heat-death affects. Necessarily, a heat-death involves the cosmos as a whole, rather than one involving any particular set of stars. It is indeed bad for our solar system if our sun burns out, and similarly bad for every other solar system when each of their respective suns burns out. But the heat-death of the universe is not the sum of any particular solar collapses. It is a phenomenon defined by the fact that not only have these or those stars burned out, but also that those were all the stars! This latter fact is quite different from the former; it cannot be derived from the former, and presents a much more dire state of affairs. The cosmos as a whole is affected by a heat-death, and affected
negatively--like a mountain range suddenly encased in ice. As (k) concludes, the whole cosmos is harmed by a heat-death.
Works Cited


Geach, Peter. 1956. “Good and Evil.” *Analysis* 17: 32-42.


