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Introductory Section

Guided by the methodology developed by W.V. Quine, contemporary metaphysics has had as its central goal answering existence questions about individual entities and entity types. However, this methodology represents a clear departure from the traditional aims of metaphysical inquiry. Instead of existence questions as the central feature of inquiry, traditional metaphysics treats existence questions as trivial and is permissive about the entities allowed into one’s ontology. In place of existence questions, traditional metaphysics seeks to examine how different entities exist and to explore interesting relations of metaphysical dependency which hold between different entities. These relations of metaphysical dependency are discussed in the literature as grounding relations. I will briefly argue in Chapter 1 that the grounding approach to metaphysics has some advantages over the Quinean model and another alternative from Rudolf Carnap.

The overview of grounding metaphysics will serve as a starting point to introduce Jonathan Schaffer’s theory of priority monism. Priority monism is a theory claiming that grounding relations between all actual concrete objects terminate in a single object. That single object is the cosmos itself. As such, priority monism claims that all actual concrete objects are ultimately grounded in the concrete cosmos and that the concrete cosmos is, therefore, the most fundamental object among actual concrete objects. The pluralist analog of priority monism claims that grounding relations between actual concrete objects terminate in a plurality of objects. Atomism, for example, is the claim that the most fundamental objects are a (possibly
infinite) plurality of atomic simples. An atomic simple is an object such that it has no proper parts\(^1\) and cannot be further subdivided. The options of monism and pluralism will be shown to be exhaustive and exclusive theories about the actual world (given a grounding metaphysics), meaning that one but not both of the theories must be correct.

Chapter 2 will include some of Schaffer’s evidence for accepting monism. I begin first by noting ways he has attempted to make monism an intuitive and plausible theory. Though this discussion does not present a positive argument for monism, it does provide some initial motivation. I then move to summarize two positive arguments Schaffer has offered for monism. The first is an argument claiming that an internal relation between all actual concrete objects would entail that monism is true. In addition to motivating this claim, Schaffer provides a candidate for such an internal relation by arguing that all actual concrete objects are in relationships of modal constraint with all other actual concrete objects. The second argument appeals to emergent properties. According to Schaffer, only the monist can account for the possibility of an emergent property which is a property of an entire concrete cosmos as a unified whole. Further, Schaffer will claim that quantum entanglement represents such an emergent property in our actual world. In addition to summarizing these arguments, I point out some concerns I have for each of them. While I think these arguments, particularly the argument from an internal relatedness, have some force, I believe that they are insufficient evidence for accepting monism.

In Chapter 3, I transition to Schaffer’s argument that the metaphysical possibility of gunky worlds entails the truth of monism. A gunky worlds is such that every object in that world has proper parts. As such, a gunky world has no atomic simples, since any potential candidate for an atomic simple would have proper parts. Schaffer uses this claim to further argue that, without

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\(^1\) Some object \(x\) is a proper part of some composite object \(o\) if and only if \(x\) is a part of \(o\) and \(x\) is not identical to \(o\).
atomic simples, the pluralist has no candidate for a fundamental level of reality among concrete objects. Therefore, we should accept monism. I will consider Schaffer’s argument from the metaphysical possibility of gunky worlds in detail, separately considering each individual premise. Special attention will be paid to the key premise that gunky worlds are metaphysically possible.

In Chapter 4, I will engage a possible problem for Schaffer’s argument from the metaphysical possibility of gunky worlds. Paralleling Schaffer’s argument, Einar Duengar Bohn has offered an argument aimed at showing that the metaphysical possibility of junky worlds entails the truth of pluralism. A junky world is such that every object is a proper part of some larger object in that world. In a junky world, there is no single object which can be called ‘the cosmos’, since any candidate for such an object would in fact be a proper part of some larger object in that world. As such, a junky world has no single object which is the most fundamental object among concrete objects. However, there are a number of difficulties in Bohn’s argument. It appears that the metaphysical possibility of both gunky and junky worlds will be incompatible with any viable candidate for a necessary principle of composition. A principle of composition states the conditions under which two or more objects create a composite object. In order to accommodate the metaphysical possibility of both gunky and junky worlds, Bohn proposes that we accept a contingent principle of composition. I will argue that a contingent principle of composition is untenable and that the tension between the metaphysical possibility of gunky worlds and the metaphysical possibility of junky worlds must be resolved some other way. I propose that the best way for alleviating the tension is to deny the metaphysical possibility of junky worlds. I will support this position by examining Bohn’s claim that the metaphysical possibility of junky worlds is equally motivated as compared to the metaphysical possibility of
gunky worlds. It is my contention that gunky worlds enjoy a considerable advantage in terms of
evidence. Drawing doubt on the claim that junky worlds are metaphysically possible, I argue that
we should deny the metaphysical possibility of junky worlds. And, if Bohn’s key premise that
junky worlds are metaphysically possible can be defeated, then his counterargument presents no
issue for Schaffer’s argument that the metaphysical possibility of gunky worlds will entail that
monism is true.
Chapter 1

Grounding Metaphysics and Actual Concrete Objects

Section 1.1: The Quine-Carnap Debate

The respective writings of W.V. Quine and Rudolf Carnap concerning the best methodology for pursuing metaphysical inquiry have sparked a metametaphysical debate that continues in contemporary philosophy. Quine’s view says that we are ontologically committed to those objects which are the potential values of bound variables in the theories we accept. Carnap’s alternative creates a split between what he calls internal and external questions relative to a linguistic framework, and holds that meaningful ontological question can only be asked relative to an existing framework. Jonathan Schaffer notes, “Contemporary textbooks usually introduce metaphysics through the Quine-Carnap debate, with Quine awarded the victory. The main resistance comes from neo-Carnapians who challenge Quine’s laurels.”¹ However, the views of both Quine and Carnap represent radical departures from traditional models of metaphysics. This is unsurprising as both Quine and Carnap were critical of traditional metaphysics. Jonathan Schaffer suggests a different paradigm for metaphysics, one he considers a “revival of a more traditional Aristotelian view.”² In addition to offering a reprieve from the dichotomy of the Quine-Carnap debate, the view supported by Schaffer allows for a revival of

² Ibid.
the type of metaphysics typically dismissed by Quine and Carnap as speculative or meaningless. I begin with overviews of the respective views held by Quine and Carnap. The detail given will be minimal, yet enough to highlight some of the potential pitfalls these views face when trying to tackle the central questions of metaphysics. I then turn to Schaffer’s revival of the Aristotelian view and his reasons for thinking it is better suited to address traditional metaphysical problems.

According to Quine, the primary question of metaphysics is “What is there?” and the answer is “Everything.” Understandably, there will be disagreements about what to include in the range of “everything,” and answering those questions will be the primary purpose of metaphysical inquiry. Quine considers an example by asking whether or not it is the case that Pegasus exists. On Quine’s view, the question is neither whether Pegasus exists as a shared mental idea nor whether Pegasus exists as a possible object. The goal is to assess the existence of Pegasus as an actual concrete object. Quine wants to make the claim that Pegasus does not exist. To make this claim, Quine must show that ‘Pegasus exists’ is both meaningful and false. But, how does one evaluate an existence claim about Pegasus if the name ‘Pegasus’ fails to refer to anything and is, therefore, meaningless? The answer according to Quine comes through Bertrand Russell’s theory of descriptions. First, the proposition ‘Pegasus exists’ must be turned into a description such as ‘there is a unique thing that pegasizes.’ While ‘pegasizes’ certainly represents an odd sort of predicate, it allows us to evaluate the original claim as ‘There exists a unique \( x \) such that \( x \) pegasizes.’ Now, existence questions can be asked about Pegasus without guaranteeing that either Pegasus exists or that the question itself will be meaningless.

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4 Ibid., 22.
5 Ibid., 27-28.
6 With ‘\( Px \)’ representing ‘\( x \) pegasizes,’ the Russellean analysis in first order logic reads: ‘\( \exists x(Px & \forall y(Py \rightarrow x=y)) \)’.
In light of Russell’s theory of descriptions, one can understand what has become the mantra of the Quinean metaphysician: “To be is, purely and simply, to be the value of a variable.”7 So, we are committed to the existence of Pegasus if and only if we are willing to hold that there is something that satisfies ‘x uniquely pegasize,’ that is, ‘∃x(Px&∀y(Py→x=y))’. To be clear, this does not tell us whether we ought to accept a theory that makes Pegasus the potential value of a bound variable in our logic. Instead, Quine’s view on metaphysics tells us what sort of ontology our theories commit us to accepting. A more generalized example concerning the existence of a type of object (as opposed to an individual object) would be the existence of numbers. According to Quine’s view, adopting any theory that allows numbers to be values of bound variables entails adopting an ontology that contains numbers. Quine writes:

We look to bound variable in connection with ontology not in order to know what there is, but in order to know what a given remark or doctrine, ours or someone else’s, says there is; and this much is quite properly a problem involving language. But what there is is another question.8

So, the Quinean refrain that “To be is to be the value of a variable” does not in itself provide answers to the existence questions regarding entities such as numbers and fictional objects. Quine compares the method for establishing an ontology to the establishment of a scientific theory:

Our acceptance of an ontology is, I think, similar in principle to our acceptance of a scientific theory, say a system of physics: we adopt, at least insofar as we are reasonable, the simplest conceptual scheme into which the disordered fragments of raw experience can be fitted and arranged.9

Whether a given thing is said to exist depends on whether allowing that thing to be the value of a variable in our theory will make our overall conceptual scheme more ordered without making it needlessly complex. The method attempts to resist needlessly multiplying entities while still

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7 Ibid., 32.
8 Ibid., 35.
9 Ibid., 36.
allowing additions to our ontology when warranted. As such, ontological questions are transformed into pragmatic questions about what theory to adopt. Schaffer notes that Quine himself converted from eliminativism to realism\textsuperscript{10} in regard to numbers, because “quantification over numbers seems indispensible to formally regimented physics.”\textsuperscript{11} However, as I will discuss when introducing Schaffer’s view, the Quinean method, while useful, suffers from deficiencies that make it an insufficient guide to metaphysical inquiry. Before turning to Schaffer, I will discuss Carnap’s alternative method to Quinean ontology, and examine the similarities between Quine and Carnap’s respective views by noting how they differ from more traditional metaphysics.

Carnap’s method of metaphysics revolves around the notion of a linguistic framework. Discussing linguistic frameworks, Carnap writes:

If someone wishes to speak in his language about a new kind of entities, he has to introduce a system of new ways of speaking, subject to new rules; we shall call this procedure the construction of a linguistic framework for the entities in question.\textsuperscript{12}

Carnap offers many examples of the sorts of entities he has in mind including numbers, propositions, properties, and even actual concrete objects. With Carnap’s method of metaphysics, we must keep in mind a distinction between questions which are internal to a linguistic framework versus those that are external to a linguistic framework. Carnap will ultimately dismiss existence questions external to a linguistic framework as meaningless and the result of cognitive confusion. But before Carnap’s criticism can be understood, one must clearly understand the intended division between internal and external questions.

\textsuperscript{10} By ‘eliminativism about numbers,’ I mean the view that numbers do not exists and by ‘realism about numbers’ the view the numbers do exist.


Internal questions are questions asked within an already established linguistic framework. Consider, for example, the linguistic framework for numbers. Within the framework of numbers, the claim ‘five is a number’ is trivially true. It also follows that, if five is a number, then numbers exist. Thus, it seems unlikely that philosophers have internal questions in mind when they inquire into the existence of numbers. The existence of numbers is an obvious and undisputed truth when considered within the framework of numbers. So, when philosophers ask questions about the existence of numbers, they are attempting to ask whether numbers exist in a sense that is external to the linguistic framework of numbers.\footnote{There are non-trivial existence questions that can be asked internal to a framework. For example, one may ask if there is a highest pair of twin prime numbers. But such a question would be approached with techniques appropriate to the number framework. Likewise, the existence of Pegasus could be judged internal to the framework of concrete things. Nonetheless, questions about the existence of numbers and concrete objects in general, when asked internal to their respective frameworks, give trivial ‘yes’ answers.}

Carnap describes external questions as “questions concerning the existence or reality of the system of entities as a whole.”\footnote{Ibid., 17.} Philosophers who consider the existence of numbers do not have in mind the trivial internal question but rather some grand question about the objective existence of numbers in a sense outside of any particular linguistic framework. While such questions are arguably at the core of traditional metaphysics, Carnap contends that external questions are unanswerable and the result of confusion:

I feel compelled to regard the external question as a pseudo-question, until both parties to the controversy offer a common interpretation of the question as a cognitive question; this would involve an indication of possible evidence regarded as relevant by both sides.\footnote{Ibid., 24.}

If two individuals disagree about whether numbers exist, they cannot resolve the dispute until they have agreed upon a common interpretation that allows the question to have cognitive content. That is, until there are established rules for what counts as verification of a sentence involving the entities in question, the question cannot have any cognitive meaning. Yet, once a
common interpretation of the question is established, the question has become an internal question subject to a set of rules and verification techniques. There becomes an agreed upon framework from within which existence claims are judged. The end-result is a methodology for metaphysics that is permissive about what entities exist as long as it remains understood that existence questions are posed within the bounds of linguistic frameworks. If it becomes useful or necessary to discuss a certain kind of entities, a new linguistic framework with a set of determined rules can be established to accommodate them. So, on Carnap’s view, existence questions (e.g. ‘do numbers exist?’) can be trivial questions internal to an existing framework, meaningless questions posed external to any framework, or a meaningful and pragmatic inquiry into whether a new framework should be adopted.

Although a clear distinction can be made between Quine and Carnap’s respective approaches to metaphysics, there are notable similarities. Both are radical departures from traditional metaphysics insofar as they take a pragmatic approach rather than searching for an objective ontology. As noted earlier, the Quine-Carnap debate has been the center of most contemporary discussions on metaphysical methodology. However, Schaffer asks, “Why think that the best understanding of metaphysics is to be found in a debate between a positivist teacher and his post-positivist student, both of whom share explicitly anti-metaphysical sympathies?”\(^{16}\) If one wants to ask objective existence questions in the traditional metaphysical sense, the “debate between anti-metaphysical pragmatists” would not be the best starting point for someone seeking methodological guidance.\(^{17}\) As an alternative, Schaffer suggests a revival of traditional metaphysics via an Aristotelian methodology in the form of grounding metaphysics.

\(^{17}\) Ibid., 349.
Section 1.2: Some Basics on Grounding

Though Schaffer credits the metaphysical methodology as having its roots in Aristotle, Fabrice Correia and Benjamin Schnieder introduce the notion of grounding relations by noting, “One of the earliest occasions on which the phenomenon of grounding has been dealt with is Plato’s Euthyphro dialogue.” While discussing the nature of piety, Socrates tells the dialogue’s title character, “The point which I should first wish to understand is whether the pious or holy is beloved by the gods because it is holy, or holy because it is beloved of the gods.” The problem is one of grounding insofar as Socrates seeks to dissuade Euthyphro of the notion that piety is grounded in something’s being beloved by the gods.

If \( x \) grounds \( y \), then \( x \) is metaphysically prior to \( y \) and \( y \) is metaphysically dependent on \( x \).

Schaffer explains some other basics of grounding:

Grounding is then irreflexive, asymmetric, and transitive. It thus induces a partial ordering over the entities (the great chain of being), with foundations (the substances, the foundation post for the great chain of being). Formally this may be modeled by a direct acyclic graph, for which every path has a starting point.

This passage does two important things. First, it shows that something has to be fundamental in order to start the chain of grounding relations. Fundamental objects are objects which are not grounded in anything and, therefore, can serve as fundamental substance(s). Fundamental substance(s) can be contrasted with derivative entities, which are objects which are grounded in some other object(s). Schaffer notes that, “Given these definitions, the categories of being fundamental and being derivative come out exhaustive and exclusive.” Secondly, this passage shows that there are several properties important to understanding the nature of grounding.

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21 Ibid., 374.
relations. Representing grounding relations with the two-place predicate ‘Gxy’ (x grounds y), these properties of grounding relations are formally represented as follows:

Irreflexivity: ∀x¬Gxx

Anti-symmetry: ∀x∀y(Gxy →¬Gyx)\textsuperscript{22}

Transitivity: ∀x∀y∀z(Gxy&Gyz)→Gxz).

These properties help reinforce the notion that chains of grounding relations must have a starting point. Whatever serves as the starting point for a chain of grounding relations will be fundamental and not grounded by anything. It cannot ground itself since grounding is irreflexive.

A plurality of objects at the beginning of a chain of grounding relations could not ground each other, since whatever is fundamental will not be grounded in anything. Finally, the transitive nature of grounding tells us that there are no odd gaps in the chains of grounding relations. If x is fundamental and grounds some derivative object y and y in turn grounds some other derivative object z, then z will also be grounded by the fundamental object x. That is, if some fundamental object x grounds a derivative object y, no other derivative object z can depends on y without also depending on x. So, there are no gaps wherein x grounds y and y grounds z, but the grounding relation fails to hold between x and z.

Before trying to motivate the methodology of grounding metaphysics as the preferred model for doing metaphysics, I will offer a few final words in an attempt to make grounding metaphysics a clear and intuitive notion. Grounding relations can exist between concrete objects and abstract objects. Indeed, the idea that abstract objects such as sets could be grounded in concrete objects sounds appealing. Schaffer gives the intuitive example of the set \{Socrates\}

\textsuperscript{22} I use “anti-symmetry” where Schaffer uses “asymmetry.” Asymmetry would be presented by ¬∀x∀y(Gxy →Gyx). Anti-symmetry is the stronger and, in the case of grounding, the correct property to discuss.
being grounded in the actual concrete object Socrates. In discussing his priority monism, Schaffer carefully restricts the discussion to grounding relations between actual concrete objects. Intuitive examples can be given to illustrate these sorts of relations. For example, it seems plausible to many that facts about the macro-physical world are grounded in facts about the sub-atomic world. That is, macro-physical objects such as tables and chairs are thought to be metaphysically dependent on sub-atomic objects such as quarks and electrons. Short of listing more intuitive examples, it is difficult to further illustrate the idea of grounding. As Schaffer notes, “Grounding should rather be taken as primitive, as per the neo-Aristotelian approach. Grounding is an unanalyzable but needed notion—it is the primitive structuring conception of metaphysics.” Attempting to explain the notion of grounding, Kit Fine writes, “Ground, if you like, stands to philosophy as cause stands to science.” When continually pressed, it is unlikely that any completely satisfying explanation of grounding is forthcoming. But as Fine notes, this is no more challenge for the metaphysician than the unanalyzable nature of causation is for the scientist. It is simply a basic, underlying notion that must be accepted as primitive in order for anything else in the system to make sense.

With these basics of the methodology of grounding metaphysics covered, I will argue that grounding metaphysics is superior to the methods offered by either Quine or Carnap, especially for anyone wanting to pursue metaphysical inquiry in its traditional fashion. Grounding metaphysics is not reductive or eliminative. That is, to say that \( x \) grounds \( y \) is not to imply in some sense that \( x \) is the real object and that \( y \) does not really exist at all. Consider the claim that minds are grounded in physical brain-states. Such a claim does not deny that minds exist nor

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24 This is a claim that Schaffer would deny.
does it claim that what is commonly called “mind” can be reduced to something else. Instead, it accepts that both minds and physical brain-states exist but that the former is metaphysically posterior and dependent on the latter. It is in this sense that Schaffer claims that grounding metaphysics should have “a permissive stance on existence.” Quine’s method makes existence questions the main goal of metaphysical inquiry while Carnap’s treats such externally framed questions as incoherent. Grounding metaphysics, on the other hand, aims to show “that the contemporary existence debates are trivial, in that the entities in question obviously do exist.”

The following are adapted from Schaffer and illustrate how grounding metaphysics takes Quinean existence questions to be trivial:

1. There are prime numbers. Therefore, there are numbers.
2. There are properties you and I share. Therefore, there are properties.
3. My body has proper parts. Therefore, there are proper parts.

Each of these examples shows a case where some sort of entities—whether numbers, properties, proper parts, or fictitious objects—can trivially be proven to exist. When contemporary metaphysicians enmesh themselves in debates about the existence of these sorts of objects, they are almost certainly appealing to the Quinean model, as the Carnapian model dismisses the questions as incoherent (if posed externally) or, in agreement with the grounding metaphysician, as being trivially and uninterestingly true (if posed internally). The point to be made is that a permissive ontology not only aligns with common sense, but that it could also allow metaphysics to return to its roots as “a discipline that studies substances and their modes and kinds, by

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28 Ibid., 357.
29 Notably, this is also an argument against mereological nihilism (i.e. the claim that there are no proper parts and only one or more atomic simples exist).
30 Ibid., 357-359.
studying the fundamental entities and what depends on them.” Metaphysicians should not be concerned, for example, with whether or not numbers exist. Of course they do. Instead, they should worry about how numbers exist, either as fundamental substances or derivative entities.

Schaffer is careful to note that permissiveness about ontology should not be equated with needlessly complicating ontology:

\[P\]ermissivism might be said to fall afoul of Occam’s Razor in multiplying entities; or violate empiricist scruples in admitting things beyond what our senses reveal; or conflict with nominalistic demands by countenancing spooky abstracta. I answer that there need be no conflict with any reasonable dictum. Occam’s Razor should only be understood to concern substances: do not multiply basic entities without necessity …. Empiricist scruples and nominalistic demands may be met if the entities in question are grounded. For instance, if numbers are indeed grounded in the concrete realm, then (i) they may be known via their concrete grounds, and (ii) they would be brought down to earth.

Grounding metaphysics does not meticulously try to eliminate objects from our ontology but, at the same time, it does not arbitrarily posit fundamental entities. It does, however, move the emphasis of metaphysics away from Quinean existence questions, which it treats as trivial so long as we make no further claims that the entities posited are fundamental.

Turning to Carnap’s methodology, we see that it allows for a permissive approach to ontology. However, unlike grounding metaphysics, the permissiveness of Carnap’s methodology stems from a distinction between internal and external questions. In Carnap’s system, linguistic frameworks become isolated and there is no room for interesting metaphysical relations across frameworks. Grounding metaphysics offers a way to possibly bridge linguistic frameworks and have a serious discussion about ontology. When the metaphysician asks how numbers exist instead of whether numbers exist, the question is not internal to the numbers framework but instead something that aims to map the metaphysical hierarchy between numbers and members.

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31 Ibid., 351.
32 Ibid., 361.
of what Carnap would consider unrelated linguistic frameworks (e.g. the world of concrete objects). Therefore, I contend that the grounding approach to metaphysics is superior to Carnap’s method, as it allows for a permissive approach to ontology without sacrificing the interesting metaphysical relationships between members of different frameworks.

Grounding presents a promising approach to metaphysics for anyone looking to escape the narrow paradigm created by the Quine-Carnap debate. Carnap’s distinction between questions that are internal or external to a particular linguistic framework allows for a permissive ontology at the cost of making linguistic frameworks isolated and disconnected from one another. While Quine’s view gives the metaphysician license to ask genuine existence questions, it does so by making existence questions the primary focus of metaphysics. Grounding metaphysics offers a much more fruitful approach to metaphysics because the metaphysician can push beyond existence questions and into questions about the metaphysical hierarchy of the world. This represents a return to traditional metaphysics insofar as it seeks to understand the underlying nature of reality. However, it should not be viewed as a push for armchair metaphysics that is removed from scientific theory and observation. Instead, it is an empirically informed attempt to solve traditional philosophical and metaphysical problems by appealing to our best scientific theories along with traditional tools of philosophy. Grounding metaphysics has the potential to be applied to solve problems in a number of areas including but not limited to the philosophy of mind, philosophy of science, and philosophy of mathematics. But most of the applications are far beyond the scope of this study, which focuses on Schaffer’s theory of priority monism—a theory that restricts itself to the discussion of actual concrete objects. In the next section, I will describe Schaffer’s priority monism in more detail and discuss some of the benefits he gains by limiting the discussion to actual concrete objects.
Section 1.3: Priority Monism and Actual Concrete Objects

Grounding metaphysics has promise in respect to a number of philosophical problems such as the ontological status of numbers, propositions, and fictitious objects. But priority monism is a theory that only concerns grounding relations between actual concrete objects. I will begin by summarizing the salient features of priority monism as formulated by Schaffer and then comment on some of the advantages the theory has in remaining agnostic to anything beyond actual concrete objects.33

Following Schaffer, I will grant that the discipline of metaphysics is best approached by acknowledging primitive and unanalyzable grounding relations between objects, particularly if one is interested in traditional metaphysical problems. In Section 1.2, I offered the intuitive example of macro-physical objects being grounded in micro-physical objects. It is necessary here to clearly articulate the notion of a proper part. Some object \( x \) is a proper part of some object \( o \) if and only if \( o \) is a composite object of which \( x \) is part and \( x \) is not identical to \( o \). Schaffer uses the notion of a proper part along with grounding relations to give the intuitive example of the whole of Socrates grounding the proper parts of Socrates (e.g. a limb or organ).34 In this case, the intuition is that the whole body of Socrates is metaphysically prior to and more basic than any of its proper parts. In the example from the previous section of macro-physical and sub-atomic objects, the popular intuition is that the smaller parts ground the larger whole. However, in the case of Socrates and his body parts, intuition suggests that the whole grounds its parts. This discrepancy shows two things. First, it shows that, although our intuitions can help us with a conceptual understanding of grounding relations, we cannot rely purely on our intuitions to understand priority ordering. Any theory that relies on grounding metaphysics as a methodology

33 While priority monism is a theory concerning actual objects in the actual world, Schaffer does appeal to modal arguments to support priority monism.
34 Schaffer, “The Internal Relatedness of All Things,” 345.
needs more than intuitive hunches to be considered plausible. The second thing that these
intuitive examples of grounding relations show us is a microcosm of the argument between the
pluralist, who takes the parts to be prior to the whole, and the monist, who hypothesizes that the
whole concrete cosmos has priority over its parts.

One initial objection that could be raised is that the existence of grounding relations
between two or more actual concrete objects is less intuitively plausible than the existence of
grounding relations between, for example, numbers and actual concrete objects. Schaffer
anticipates this objection and remarks that it “seems a gratuitous restriction to disallow the
prospect of priority relations holding between actual concrete objects.”35 There are certainly
instances where it seems plausible to posit grounding relations between non-concrete objects
such as the number 3 and the set \{3\}.36 It is arbitrary to exclude actual concrete objects from the
hierarchy of metaphysical priority relations. And, even if the examples of grounding relations
between actual concrete objects are not as intuitive as other examples of grounding relations,
they nonetheless remain convincing.

Granting the existence of grounding relations between actual concrete objects, we can
begin to understand the metaphysical hierarchy of our concrete world without concern for any
abstract objects. Priority monism and its pluralistic competitors can remain agnostic on the
nature of non-concrete entities or properties in regard to their being fundamental or derivative.
Thus, Schaffer describes the monist and the pluralist:

The monist holds the whole is prior to its parts, and thus views the cosmos as
fundamental, with metaphysical explanation dangling downward from the One.
The pluralist holds the parts are prior to their whole, and thus tends to consider

36 Which of these two grounds the other is certainly a highly debatable topic and outside the scope of this thesis.
Nonetheless, it is another illustration of a worthwhile area of inquiry one could tackle using grounding metaphysics.
particles fundamental, with metaphysical explanation snaking upward from the many.\footnote{Ibid., 31-32.}

Both the monist and the pluralist accept the existence of grounding relations between actual concrete objects. Furthermore, both believe that the chain of grounding terminates in something which is fundamental. The monist believes there to only be one fundamental object—namely, the cosmos taken as a single concrete object with all other concrete objects as proper parts. ‘Pluralism’ would correctly describe any theory that posits more than one object as fundamental. Therefore, monism and pluralism are exhaustive and exclusive theories. One, but not both of them must be the correct grounding metaphysics.

Though Schaffer takes himself to be contributing to the debate between monists and pluralists stretching all the way to Parmenides, he is aware that some will object to his use of the terminology. Schaffer suggests:

> If you doubt that the view at issue deserves to be called ‘monism’, call it something else. Never mind the history. If you doubt that that (sic) the classical monists endorsed this view, call it a new proposal. Just understand the content of the proposal: the whole concrete cosmos is prior to its particles, pebbles, planets, and other proper parts.\footnote{Schaffer, “The Internal Relatedness of All Things,” 344-345.}

To be certain, Schaffer has arguments for contextualizing priority monism as a continuation of the monist tradition in philosophy.\footnote{See Schaffer, “Monism: The Priority of the Whole,” 65-71.} But this historical concern stands auxiliary to the main issue of the theory itself. Priority monism has roots in traditional philosophy, but it is a contemporary theory supported by contemporary evidence.

It is worth taking a moment to note one final implication of Schaffer’s restricting the discussion to actual concrete objects. As mentioned, this limiting in the scope of priority monism has the key advantage of remaining neutral on issues of abstract objects and of properties. It may
be tempting for the priority monist to claim that all abstract objects are also ultimately grounded in the concrete whole of the cosmos, but such a claim commits the monist to more than is necessary. Schaffer has also limited the discussion to concrete objects in the actual world. By doing so, Shaffer also manages to remain agnostic on the issue of trans-world objects, which are objects with proper parts in more than one possible world. It is not beyond the purview of grounding metaphysics to explore trans-world objects, supposing that a plausible principle of composition was established that allowed for such objects.\(^{40}\) Indeed, David Lewis has posited such a principle of composition that would allow for trans-world objects.\(^{41}\) Again, however, a commitment to such objects is simply beyond what the priority monist needs to engage in order to support the theory.

Priority monism, then, is a theory that accepts the grounding approach to metaphysics rather than the Carnapian or even more popular Quinean methodology. Further, the theory assumes that the hierarchy of metaphysical priority extends to allow grounding relationships between all actual concrete objects. Finally, priority monism poses that the whole concrete cosmos is the most fundamental object on which all other actual concrete objects metaphysically depend. So far, inclinations towards either monism or pluralism have only been motivated by vague intuitions. In Chapter 2, I will give some of Schaffer’s reasons for favoring monism over pluralism, most notably an argument from an internal relatedness among all things and an argument from the possibility of emergent properties.

\(^{40}\) Though I cannot discuss it at length here, I find the potential for trans-world objects intriguing in respect to priority monism and in light of contemporary theories appealing to quantum physics to suggest that possibilities may have a higher ontological standing than actualities. If trans-world objects are allowed, priority monism would be a theory giving the highest metaphysical priority to a fusion of all concrete objects in all possible worlds.

Chapter 2

Some Arguments for Priority Monism

Section 2.1: Priority Monism, the Cosmos, and Parsimony

In Chapter 1, I traced Schaffer’s attempt to motivate a hierarchy of metaphysical priority between actual concrete objects that necessarily terminates in one or more objects which are fundamental (i.e. not derivative). I also discussed Schaffer’s preference for priority monism, the view that the whole concrete cosmos is fundamental and all of its proper parts derivative. Before engaging Schaffer’s more complex arguments for priority monism, I will introduce some of the initial reasons for thinking that priority monism is a plausible theory and why such a theory would be potentially desirable. I will then give summaries of Schaffer’s arguments for priority monism that appeal to internal relatedness and emergent properties, respectively. I will also briefly mention some counterarguments that have been offered in response to Schaffer in addition to my own assessments of these arguments. Schaffer’s argument from internal relatedness has some force, though much of the argument will hinge on controversial assumptions. The argument from emergent properties, on the other hand, seems to be successfully refuted by an appeal to plural logic.

Priority monism claims that the most fundamental object among actual concrete objects is the entire cosmos, with the entire cosmos understood to be a single composite object. As the largest composite object, the cosmos is the mereological fusion of all concrete objects (i.e. the
universal fusion).¹ Let us call this universal fusion of all actual concrete objects \( u \). Importantly, it cannot be taken for granted that such an object exists. According to some theories of mereological composition, there is no singular object to call the universe, because there is no universal fusion. However, Schaffer endorses classical mereology, which guarantees a universal fusion. And, while Schaffer does not offer a lengthy defense of classical mereology, he does argue that it is the position favored by common sense.² I now turn to consider the reasons Schaffer gives for accepting the existence of the universal fusion \( u \).

Schaffer appeals to both intuition and to empirical science in order to support the existence of \( u \). First, he notes that the term ‘the cosmos’ is a singular term in natural language, giving intuitive plausibility to there being a universal fusion.³ Second, he claims that, “The cosmos is the object of empirical study. Indeed it is the primary subject matter of physical cosmology.”⁴ Therefore, to reject the existence of \( u \) requires a rejection of the intuitive claim that ‘the cosmos’ is a referring singular term and a rejection of the subject of cosmological inquiry. This argument is notably problematic. It is questionable how much weight should be given to an intuition built off linguistic practice. Further, it takes nothing away from empirical cosmology to consider the cosmos as a collection of objects rather than a universal fusion \( u \). Though I find these particular arguments problematic, I will argue in Chapter 4 that the existence of \( u \) can be guaranteed by claiming that unrestricted mereological composition is necessarily true. For now, let us continue with the assumption that the universal fusion \( u \) exists.

¹ Mereology is the study of the relation between parts and wholes. A mereological fusion of a collection of objects is the composite object which they compose. In classical mereology, for any set of objects, there is an object that fuses (i.e. is the fusion of) that set.
³ Ibid., 34.
⁴ Ibid.
According to Schaffer, we gain ontological simplicity by accepting that \( u \) is the most fundamental entity among actual concrete objects. Recall from Chapter 1 that grounding metaphysics, and by extension priority monism, is neither reductive nor eliminative. Macro-physical objects such as tables and chairs are said to exist in addition to sub-atomic objects such as electrons and quarks which are proper parts of macro-physical objects. In an attempt to lessen the *prima facie* tension created by this explosion in the number of objects in our ontology, Schaffer notes that only derivative entities are being multiplied. So long as the number of fundamental entities is not increased without necessity, the theory does not violate Occam’s Razor. In his article “From Nihilism to Monism,” Schaffer gives numerous arguments for why someone accepting a nihilist principle of mereology (the view that there are no composite objects only one or more atomic simples) should embrace monism.\(^5\) “Existence monism” is the name Schaffer gives to the theory there are no composite objects or proper parts, but that the entire cosmos—taken to be a single *non-composite* object—is the only actual object. On this view, when we say, for example, that there is a table, we are not asserting that an object, the table, exists. Instead, what we literally mean is that the world has a table-ish aspect or that the world is configured table-ishly. Schaffer writes, “When we say that there is a table, the [existence] monist holds that what exists is *the world aspected table-ishy.*”\(^6\) This theory is parsimonious because it leads to a terrifically simple ontology of only one object. Schaffer notes that, as nihilism generally seeks the simplest possible ontology, existence monism represents the best nihilistic theory.\(^7\) But, supposing one did not accept nihilism—which Schaffer does not—one can still maintain a level of parsimony by positing priority monism. All other things being equal, priority monism is superior to any pluralistic theory on metaphysical priority because it admits the fewest

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\(^6\) Ibid., 179.

\(^7\) Ibid., 188.
number of fundamental entities into its ontology: namely, the one object which is the universal fusion \( u \). This alone does not establish priority monism to be preferable to pluralistic grounding metaphysics. However, it does provide motivation for further investigation. Priority monism represents a non-reductive and non-eliminative theory that manages to be both permissive about existence questions but remain parsimonious about what objects are fundamental.

Section 2.2: An Argument from Internal Relatedness

In an article titled “The Internal Relatedness of All Things,” Schaffer gives his positive argument in support of priority monism which appeals to a neo-Hegelian internal relatedness among all actual concrete object.\(^8\) This article contains two distinct parts, (i) an argument that an internal relatedness among all actual concrete objects would entail priority monism and (ii) that such an internal relatedness among all actual concrete objects exists. Schaffer admits that there is “no determinate answer” with regard to what is meant by an internal relation.\(^9\) At the very least, we can contrast an internal relatedness with an external relatedness by noting that the relationship depends on nothing besides the objects which are related. Schaffer’s specific candidate for an internal relation will add further clarity to the distinction.

Schaffer begins “to work with the notion of a modally constraining relation, which is a relation that precludes the free recombination of its relata.”\(^10\) As a matter of symbolization for Schaffer, ‘\( \neg \mathcal{M}^2xy \)’ means that \( x \) and \( y \) are modally constrained while ‘\( \mathcal{M}^2xy \)’ means \( x \) and \( y \) are modally free.\(^11\) The superscript is intended to indicate the number of relata involved in the

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\(^8\) Schaffer, “The Internal Relatedness of All Things,” 341.
\(^9\) Ibid., 348.
\(^10\) Ibid., 350.
\(^11\) Ibid., 351.
relation which is understood to be irreflexive, symmetric, and non-transitive. Schaffer offers a summarization of what it means for objects to be modally free:

If $M^2 xy$ then: for any way that $x$ can be, and for any way that $y$ can be, there is a metaphysically possible world $w$ in which $x$ and $y$ are each these respective ways (barring co-location, and leaving the rest of the world as it is).\(^{12}\)

If it turns out that there is no metaphysically possible world as called for by the above definition, we can infer that $x$ and $y$ are not modally free (i.e. $\neg M^2 xy$) and that $x$ and $y$ have an internal relationship of modal constraint.

With the initial concepts explored, Schaffer’s task becomes to motivate the conditional: if everything in the world is internally related, then monism is true. After motivating the truth of this conditional, Schaffer will then move to motivate the truth of the antecedent. But first, he must establish the conditional. To accomplish this, he offers two proofs that indicate that, if there is an internal relationship of modal constraint between all actual concrete objects, then priority monism must be true.

The first proof aims to show that one or more objects must be fundamental among actual concrete objects, and that the cosmos is the best candidate for that fundamental object because it uniquely overlaps all other actual concrete objects.\(^{13}\) This proof will trade on an underlying assumption for which I have already argued; namely, that at least one or more objects must be fundamental.\(^{14}\) The other assumption employed is that any fundamental object will be modally free of any object it does not overlap. Schaffer motivates the assumption as follows:

Suppose $x$ is a basic [fundamental] entity. Then it is ontologically independent. If there is some $y$ that it does not overlap, then $x$ and $y$ are mereologically

\(^{12}\) Ibid., 354.
\(^{13}\) Ibid., 356-357.
\(^{14}\) In Schaffer’s article, he uses ‘basic’ instead of ‘fundamental’ to emphasize the fact that priority monism is a theory restricted to actual concrete objects. I continue to use the language of fundamentality for consistency.
independent. But now there seems to be nothing to tie \( x \) and \( y \) together across worlds, so there should be no barrier remaining to free recombination.\(^\text{15}\)

Now, we may continue to Schaffer’s first proof. First, we may provisionally assume the antecedent of the conditional which we are trying to prove. So assume that there is an internal relation of modal constraint between all concrete objects and so no two objects are modally free.\(^\text{16}\) Next, assume, for *reductio*, that pluralism is true. From the assumption that pluralism is true, it follows that there is a fundamental concrete object which is a proper part of the concrete cosmos. Call this object ‘\( a \)’. Since \( a \) is a proper part of the cosmos, there must be another proper part of the cosmos with which \( a \) does not overlap. This is an instance of weak concrete supplementation, which “tells us that any concrete object that has one concrete proper part must also have some other disjoint concrete proper part.”\(^\text{17}\) Call this other non-overlapping proper part ‘\( b \)’. Now, from our assumption that a fundamental object is modally free from any object it does not overlap, we know that \( a \) must be modally free of \( b \) since \( a \) is fundamental and does not overlap \( b \). However, this contradicts our assumption for conditional proof that no two actual concrete objects are modally free from one another. Schaffer blames this contradiction on the assumption that pluralism is true, the premise originally intended to be reduced to absurdity. Therefore, Schaffer concludes that there exists a unique object which is fundamental and that object is the cosmos. This follows from the assumption that there must be at least one object which is fundamental and the fact that the cosmos is the only plausible candidate for a fundamental object of which all other concrete objects are proper parts. The conditional proof is

\(^{15}\) Ibid., 356.

\(^{16}\) Recall that the conditional is, if all actual concrete objects share in an internal relationship of modal constraint, then monism is true. Accepting a system of classical logic that adheres to the law of non-contradiction, to assume that all actual concrete objects are in a modally constrained relationship is equivalent to assuming that no two actual concrete objects are modally free from one another.

\(^{17}\) Ibid., 356. This can also be understood by considering the definition of a proper part. If \( x \) is a proper part of some composite object \( o \), then \( x \neq o \) and there exists at least one other object \( y \) such that \( y \) is a proper part of \( o \) and \( x \neq y \).
complete as Schaffer has shown that assuming the existence of an internal relationship of modal constraint between all objects will entail that priority monism is true.

Schaffer offers a second proof to motivate that, if an internal relationship of modal constraint exists between all actual concrete objects, then priority monism is true. This proof aims to show that “what is so special about the universe is that it is the only thing with no complement (the universe minus itself would be nothing, and classical mereology tolerates no null individual).”\textsuperscript{18} The proof will employ the assumption that modally constrained objects that do not overlap are interdependent. Schaffer writes, “[t]his assumption links the mereological notion of overlap, the modal notion of independence, and the metaphysical status of interdependence.”\textsuperscript{19} He motivates this assumption writing:

The idea now is that if you have two mereologically independent entities $x$ and $y$ that are modally linked, it must be because they are co-dependent upon a common ground $z$. But $z$ must contain both $x$ and $y$ as parts, for if there were any portion of $x$ or $y$ outside of $z$, $z$ would not ‘contain enough reality’ to ground the left out portion.\textsuperscript{20}

As with the first proof, Schaffer assumes, for conditional proof, that no two objects are modally free from one another. He then assumes, for \textit{reductio}, that the cosmos is not actually a fundamental concrete object. If that is the case, then the actual concrete cosmos will be grounded by one or more objects. Let us call one of these objects ‘$a$’. Since grounding is an anti-symmetric relation, it cannot be the case that $a$ is grounded by the cosmos. Grounding is also irreflexive, so $a$ cannot be identical to the cosmos and, therefore, must be a proper part of the cosmos. Let ‘$a^*$’ represent the complement of $a$ (i.e. everything in the cosmos except $a$). Following from our assumption for conditional proof, $a$ and $a^*$ are not modally free. They also obviously do not overlap one another. So, given the assumption that non-overlapping objects that are modally

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{18} Ibid., 360.
\item \textsuperscript{19} Ibid., 358.
\item \textsuperscript{20} Ibid.
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constrained must be interdependent, \(a\) and \(a^*\) must be interdependent. If they are interdependent and grounded by a common whole, the only candidate for that common whole is the cosmos. This is because the cosmos is the only whole of which both \(a\) and \(a^*\) are proper parts. It follows that \(a\) must be grounded by the cosmos. But since this creates a contradiction with an earlier inference that the cosmos is grounded by \(a\), Schaffer concludes by *reductio* that the cosmos is fundamental. To complete the proof, Schaffer will show that the cosmos is the *only* fundamental object. For another *reductio*, Schaffer assumes that there exists an object, let us call it ‘\(b\)’, which is fundamental and a proper part of the cosmos. Since \(b\) is a proper part of the cosmos, there must be a complement to \(b\). Let’s call it ‘\(b^*\)’. By our established assumptions, \(b\) and \(b^*\) are not modally free and do not overlap and, therefore, are interdependent. So, \(b\) is grounded by something and cannot be fundamental, which contradicts with our assumption for *reductio* that \(b\) is fundamental. The second *reductio* is complete and shows there cannot be an object which is fundamental and a proper part of the universe. Schaffer can conclude the second proof by asserting that, if there exists a modally constraining internal relationship between all actual concrete objects, then priority monism is true.

Having completed his two proofs for the conditional ‘if there is universal internal relatedness, then monism is true’, we can move to examine Schaffer’s arguments for the conclusion that there actually is a universal internal relation of modal constraint between all actual concrete objects. Schaffer notes two different ways that one can go about arguing for universal internal relatedness.\(^{21}\) The first strategy is to claim that all relations are internal relations. But Schaffer does not need to claim that all relations are internal. In fact, he only needs

\(^{21}\) Ibid., 361-362.
to claim that all things are related by a single internal relation of modal constraint.\textsuperscript{22} Employing this second strategy, Schaffer can argue for universal internal relatedness without facing the criticism that the existence of external relations seems obvious. Schaffer offers three unique candidates for this relation, each relying on a different set of assumptions.

Schaffer’s first candidate for an internal relation of modal constraint holding between all concrete objects is causal connectedness.\textsuperscript{23} Importantly, this argument will require “assuming some level of determinism.”\textsuperscript{24} Another necessary assumption is causal essentialism, the view that “individuals bear their causal powers and liabilities essentially.”\textsuperscript{25} The argument can be understood by imaging two actual objects, $a$ and $b$, that came into existence as a result of the big bang. Like everything else in our universe, one can draw a casual path from $a$ or $b$ that stretches back to the big bang. Furthermore, one can draw a casual path from $a$ back to the big bang and then forward to $b$. Schaffer writes, “Given causal essentialism, causal connectedness will impose modal constraints, since causal connectedness will generate necessary connections.”\textsuperscript{26} So, $a$ and $b$ have a necessary causal connection and are thereby modally constrained. But, since the common point of causation for $a$ and $b$ was the big bang itself, every concrete object in our cosmos would have a necessary causal connection to every other concrete object and no two concrete objects would be modally free.

The second offering for an internal relation that holds between all concrete objects is spatiotemporal relatedness, which Schaffer defines as “the relation of belonging to a common
An assumption required for this argument is structuralist supersubstantivalism. The supersubstantivalist case posits that space-time regions are identical to actual concrete objects, rather than space-time being the container within which actual concrete objects are contained. The structuralist thesis is that “space-time regions possess their distance relations essentially.” Schaffer has elsewhere argued in favor of supersubstantivalism independent of the structuralist thesis. When taken together, however, structuralist supersubstantivalism says that all actual concrete objects are identical with space-time regions and distance relations between space-time regions are essential to those regions. Therefore, distance relations are essential to all actual concrete objects. Since all actual concrete objects are in essential distance relations with all other actual concrete objects, all actual concrete objects share an internal relatedness.

The final candidate for a universal internal relationship of modal constraint that would hold between all concrete objects is the relation of being worldmates. All actual concrete objects share the relation of being worldmates. This example will require the assumption of counterpart theory, about which Schaffer writes, “[w]hat I specifically have in mind is P2 of Lewisian counterpart theory, which says that all entities are world-bound entities, and which Lewis glosses as: ‘Nothing is in two worlds’.” So, while actual concrete objects $a$ and $b$ may have a counterpart in some other possible world, $a$ and $b$ are found nowhere except the actual world where they exist. Since both $a$ and $b$ are actual concrete objects, there are no possible worlds where $a$ exists without $b$ or vice versa. Schaffer concludes that “the world to which a given entity

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27 Ibid., 365.
30 Schaffer, “The Internal Relatedness of All Things,” 367. For more on Lewsian counterpart theory, see Lewis, On the Plurality of Worlds.
is bound turns out to be a necessary accompaniment to that entity.”31 And since the relation of being worldmates is shared by all actual concrete objects, being worldmates can serve as a universal internal relation of modal constraint.

To review, Schaffer’s argument for priority monism can be split into two distinct stages. The first stage aims at proving that, if there is an internal relation of modal constraint between all actual concrete objects, then it follows that priority monism is true. I believe that Schaffer has successfully motivated this conditional insofar as none of his initial assumptions are particularly controversial and Schaffer only requires a single internal relationship. The second stage of Schaffer’s argument is more problematic. It is beyond the scope of this investigation to examine each of the three candidates for an internal relation of modal constraint offered by Schaffer. Yet it should be noted that accepting any of the three candidates requires accepting the controversial assumptions that make them plausible as a universal relation shared by all actual concrete objects. This is not to say that those assumptions could not be argued for or that there are no would-be pluralists who would already accept those assumptions.

Section 2.3: An Argument from Emergent Properties

I will now move from Schaffer’s argument from internal relatedness to his argument that the existence of emergent properties entails that priority monism is true. Emergent properties are, according to Schaffer, properties that can only be understood when the objects which instantiate them are considered holistically.32 Suppose some composite object $o$ has an emergent property. If one were only to duplicate the proper parts of $o$, their intrinsic properties, and the spatio-temporal relations between them, one would not have thereby duplicated the emergent property.

31 Schaffer, “The Internal Relatedness of All Things,” 368.
of the whole. That is, an emergent property of a whole is more than the sum of the intrinsic properties of and fundamental relations between its proper parts. Schaffer’s arguments appealing to emergent properties take two forms. One is a modal argument that moves from the mere metaphysical possibility that some world has emergent properties to the truth of priority monism as a matter of metaphysical necessity. The other argument from emergent properties appeals to the claim that our entire cosmos is a single, entangled quantum system and so quantum entanglement is an emergent property instantiated by the actual world. Schaffer will argue that it follows that priority monism is true of the actual world. I begin with the argument appealing to quantum entanglement in the actual world because, even if one is unconvinced that our actual concrete cosmos is a single entangled system, the argument can perhaps still motivate the premise that emergent properties are at least metaphysically possible.

Schaffer offers the following as a description of a quantum entanglement system:

An entangled system is one whose state vector is not factorizable into tensor products of the state vectors of its n components … Thus the quantum state of an entangled system contains information over and above that of the quantum states of its components.33

He further illustrates the notion by imagining two electrons in an entangled state.34 In the particular case Schaffer has in mind, the combined spin of the entire system is always zero. This means that, if one of the two electrons has a spin-up value of .5, then the other electron will have a spin-down value of .5, bringing the total value of the entanglement system to zero.35 The existence of quantum entanglement systems composed of two or more sub-atomic entities is uncontroversial. The difficulty for Schaffer, then, is to show that the entire cosmos is a single entangled system and that such an entangled cosmos entails monism.

32 Ibid., 51.
33 Ibid. 34 Quantum entanglement systems are fascinating insofar as the individual entities that compose the system may have vast spatial distances between them and no other observable interactions with one another.
In respect to the cosmos being a single entangled system, Schaffer cites evidence from physics and from mathematics. He writes, “Physically, one gets initial entanglement from the assumption that the world begins in one explosion (the Big Bang) in which everything interacts.” Through this initial interaction, all concrete objects in the cosmos enter into a state of entanglement. Schaffer further claims that, “Mathematically, one need only to suppose that there is a wave-function of the universe. Then it is virtually certain that it will be entangled since measure 1 of all wave-functions are entangled.” This is to claim that the default position for our cosmos is to be in a single entangled state. Much more could be said regarding Schaffer’s claims that our cosmos is a single entangled system; however, little will trade on the claim outside the context of this particular proof for priority monism. It is sufficient to say that Schaffer’s claims in this regard trade on plausible but hardly uncontroversial interpretations of quantum physics.

For now, let us grant Schaffer that our cosmos is a single entangled system and examine his argument that such a state-of-affairs entail monism.

Schaffer contends that entangled systems are best understood as fundamental wholes. He writes:

In general, duplicating the intrinsic properties of the particles, along with the spatiotemporal relations between the particles, does not metaphysically suffice to duplicate the cosmos and its contents. The intrinsic correlational properties of entangled wholes would not be duplicated.

Adding this notion to Schaffer’s argument that our cosmos is a single entangled system, it follows that our cosmos must be understood as a fundamental whole. Schaffer concludes that the holistic nature to our cosmos should lead us to favor monism over pluralism.

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36 Ibid., 52.
37 Ibid.
38 Ibid.
39 Ibid., 53.
Moving from the argument concerning quantum entanglement in the actual world, Schaffer’s more general argument is that the mere metaphysical possibility of emergent properties (of which quantum entanglement is only one instance) entails priority monism.\textsuperscript{40}

Important to understanding this argument and other arguments to be presented in Chapters 3 and 4 is the notion that monism or pluralism, whichever is true, is true as a matter of metaphysical necessity. Schaffer supports this view writing:

Now I take it that Monism and Pluralism, though defined as doctrines about the actual world, are metaphysically general theses, in the sense that whichever doctrine is true, is true with metaphysical necessity. Just as the dispute as to whether properties are universals, tropes, or nominalistic constructions is thought to concern metaphysical necessity, so the dispute over the priority of the whole seems to concern a comparable necessity. Indeed, I take the realm of metaphysical possibility to concern what is compossible with the law of metaphysics, which govern what grounds what. Monism and Pluralism are rival doctrines about the laws of metaphysics, with respect to the grounding mereological structure.\textsuperscript{41}

If priority monism (or pluralism, for that matter) is true in any possible world, then the theory is true in all possible worlds.

Whether or not one accepts Schaffer’s claim that our actual cosmos is a single quantum entanglement system, it should be uncontroversial that emergent properties are at least metaphysically possible. As would be the case if our cosmos were a single entangled system, the existence of a possible world with emergent properties would entail that that possible world is also a fundamental whole with proper parts.\textsuperscript{42} Again, this sort of holistic take on the cosmos, according to Schaffer, would entail monism. Now the various claims can be combined to state Schaffer’s proof from the mere possibility of emergent properties. Monism would be true in a

\textsuperscript{40} Ibid., 55-57.
\textsuperscript{41} Ibid., 56.
\textsuperscript{42} Ibid., 55. It is important to note that the possible cosmos in question has proper parts because, without proper parts, there would only be one object and, therefore, no possibility of emergent properties. Furthermore, the emergent properties in question are limited to ones that originate from considering all concrete objects in a possible world. In other words, it is not enough that some object in a world have an emergent property. To provide support for priority monism, the world itself must have an emergent property.
possible world with emergent properties. And, if monism is true in any possible world, then monism is true as a matter of necessity. Emergent properties are metaphysically possible and, therefore, there are possible worlds where monism is true. Since there are possible worlds where monism is true, monism is true in every possible world, including our actual world.

I have liberally granted Schaffer several assumptions throughout my exposition of his argument from emergent properties. This is because, even granting the majority of Schaffer’s assumptions, I believe that Einar Duenger Bohn has delivered a response to this argument on behalf of the pluralist which grants most of Schaffer’s assumptions and still rejects monism. Bohn contends that Schaffer’s argument can be countered if we employ plural logic (i.e. allow for quantification over irreducible pluralities of objects). In response to Schaffer’s argument regarding quantum entanglement in the actual world, Bohn writes:

Taking plural logic metaphysically seriously, it is simply false that duplicating the intrinsic properties of these particles, along with their spatiotemporal relations, does not metaphysically suffice to duplicate their fusion and its contents. The pluralist should simply say of the two particles that they have a quantum property $Q$. Having $Q$ is a plural, collective intrinsic property of the two particles.

Consider some collection of one or more objects. Let us call this collection $xx$. According to Schaffer, it is only by considering the fusion of collection $xx$ as a composite object $o$ which is fundamentally whole that we can say something has quantum property $Q$. That is, composite object $o$ considered as a fusion has property $Q$ but only when considered holistically. Bohn denies that claim, instead asserting that collection $xx$ can have quantum property $Q$ without needing to be considered as a fundamental whole (i.e. composite object $o$), but rather considered as an irreducible plurality. Bohn uses a similar line of reasoning to reject Schaffer’s argument.

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44 Ibid., 218.
that the mere possibility of emergent properties entails monism.\textsuperscript{45} The metaphysical possibility of a world with emergent properties does not entail that that world is a fundamental whole because plural logic allows for emergent properties to be instantiated by irreducibly plural collections of objects.

I believe that Bohn’s response to Schaffer’s argument from emergent properties is successful and that Schaffer’s proof is, therefore, unsuccessful. It appears that the monist has no non-question begging reason to deny the pluralist the ability to quantify over irreducibly plural collections. I am more sympathetic to the argument from an internal relatedness between all actual concrete objects; however, Schaffer has built his proofs in this argument around a number of highly controversial claims. In the next chapter, I will present Schaffer’s argument for priority monism which trades on premises that enjoy a much wider acceptance.

\textsuperscript{45} Ibid., 220.
Chapter 3

Priority Monism and Gunky Possible Worlds

Section 3.1: An Argument from Gunky Possible Worlds

In this Chapter I will discuss gunky possible worlds and Schaffer’s argument that such a metaphysical possibility provides evidence for priority monism. I will begin the first section granting Schaffer the possibility of gunky worlds and present his proof for monism. In the second section, I will motivate the claim that gunky worlds are metaphysically possible. This motivation will include Schaffer’s arguments that gunk is conceivable, supported by classical mereology, and a scientifically serious hypothesis about the actual world.¹

A concrete object \( x \) is gunky if and only if every proper part of \( x \) itself has proper parts. In other words, an object is gunky if the matter it is composed of is infinitely divisible into smaller and smaller parts. A possible world \( w \) is called ‘gunky’ if and only if for any concrete object \( x \) in world \( w \), there exists a concrete object \( y \) such that \( y \) is a proper part of \( x \). In such a world, all concrete matter would be gunky. It is possible that a world contain some gunky concrete objects and some concrete objects which are composed of mereological atoms. We might call such a world a mixed world. For simplicity, I will only focus on the possibility of a world in which all concrete objects are gunky.

Schaffer has appealed to gunky possible worlds in the context of two interrelated arguments. In an earlier article, Schaffer argues that the epistemic possibility that the actual world is gunky should lead us to reject atomistic pluralism, the view that a plurality of atomic simples is the most fundamental level of concrete objects. However, I am primarily interested in the second, more advanced argument that purports to prove priority monism from the metaphysical possibility of gunk along with a few other plausible assumptions, each of which I will attempt to motivate. The argument presented in this section is adapted from Schaffer’s article “Monism: The Priority of the Whole,” with a few liberties in presentation aimed at condensing the argument and creating a format that more closely parallels the argument for pluralism from junky possible worlds to be presented in the next chapter. The basic content of the argument, however, will directly follow Schaffer.

We begin by assuming:

1. Gunky worlds are metaphysically possible.

As stated earlier, I will argue for the truth of this premise at length in the next section of this chapter. So, let us grant this premise for now and consider the other assumptions necessary for Schaffer’s proof of priority monism.

The second assumption needed for the proof is that the only viable form of pluralism is atomism. Atomism is the view that all fundamental concrete objects are mereological atoms (and hence have no proper parts). Importantly, this may or may not be nihilistic atomism. Such a theory may suppose that the atomic simples are the only concrete objects (nihilistic atomism) or it may endorse the pluralist analog to priority monism which would admit the existence of composite objects but suppose that they are grounded in atomic simples. So, our assumption will

be:

2. Necessarily, if pluralism is true, then atomism is true.

Schaffer offers support for this premise by arguing that the only alternative to atomism for the pluralist is a theory which privileges some class of molecules as most fundamental among actual concrete objects. Schaffer considers a homogenous piece of gunky matter. Since the matter is gunky, there is no atomic level that could possibly serve as fundamental. But there also appears to be no non-arbitrary reason for privileging any particular molecular level of such a piece of matter as fundamental. Schaffer argues that privileging any molecules (besides the whole) as fundamental would be “objectionably arbitrary” and “quasi-monistic.” Privileging a molecular level is said to be quasi-monistic insofar as it is already a case of privileging the whole over its parts. The only molecular level of our homogenous piece of gunky matter which could non-arbitrarily be considered fundamental would be the topmost level that contains the whole object. The result is a sort of quasi-monism since we could now imagine a possible world that contained only this one gunky object. In such a world, the object would be the whole cosmos. If a pluralist is willing to promote wholes as grounding their parts, “it is hard to see how the molecular pluralist could have any principled objection to monism.” Since a molecular pluralism would be objectionably arbitrary, the pluralist has no alternative but to accept atomism.

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4 Ibid., 63-64.
5 Ibid., 63.
6 Remember that grounding is anti-symmetric. Therefore, if some molecule grounds its proper parts, then the molecules proper parts cannot possibly be fundamental. Either the molecule that grounds them is fundamental or it is grounded by some object of which it is a proper part.
7 Ibid., 64.
8 This does represent a slight deviation from Schaffer as he arrives at the modal claim through a more extended proof. Supposing one did find an objection to my addition of a modal operator, consider this alternative proof of the premise: If pluralism is true, then atomist is true. If atomism is true, it is true necessarily, since grounding will terminate in the same direction in every possible world (this will be assumption 4 in my presentation). Therefore, necessarily, if pluralism is true, then atomism is true.
Our next assumption is plausibly the least controversial of all assumptions needed for the proof:

3. If gunky worlds are metaphysically possible, then it is possible that atomism is false.

Atomism is a theory that posits concrete atomic simples as the fundamental level among concrete objects. A gunky possible world is such that there are no atomic simples. From this, it should follow uncontroversially that atomism is false in any gunky possible world.

From 1 and 3 we can infer that it is at least possible for atomism to be false. If atomism can be false, then we can conclude that pluralism can be false and, therefore, is not true as a matter of necessity. A final assumption will be needed, however, to establish the truth of priority monism in the actual world:

4. Monism or pluralism, whichever is true, is true in all possible worlds.

This assumption has already been discussed and motivated in Chapter 2 in regard to the argument from emergent properties. Schaffer claims that grounding relations should follow in the same direction (wholes grounding parts or parts grounding wholes) in every possible world with concrete objects “given that metaphysical possibility holds fixed how grounding works.”

So far, I have shown how from assumptions 1, 2, and 3, we can infer that it is metaphysically possible for pluralism to be false. So, it is not the case that pluralism is necessarily true and, using this inference along with the disjunction in 4, we may conclude:

5. So, monism is true in all possible worlds.

Of course, if monism is true of all possible worlds, then we can infer that monism is true of the actual world. It may be worth noting that, while this does prove priority monism about the actual world, it does not yet prove that pluralism is necessarily false. That claim would require the

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9 Ibid., 63.
additional but easily motivated assumption that monism and pluralism are exclusive theories. If monism is true, then there is one fundamental concrete object. If pluralism is true, there are two or more fundamental concrete objects. There must be either one or more than one fundamental concrete object. Thus, either monism or pluralism, but not both, must be true. Having presented Schaffer’s case that the metaphysical possibility of gunky worlds entails that priority monism is true, I now turn to motivate the assumption that gunky worlds are metaphysically possible.

**Section 3.2: The Metaphysical Possibility of Gunk**

Schaffer’s has provided three distinct claims that, when taken together, strongly suggest that gunky worlds are at least metaphysically possible. Following the proof from the previous section, no stronger claim (e.g. that the actual world is gunky) will be necessary. Schaffer contends that gunky possible worlds exist based on the evidence that (i) gunky possible worlds are conceivable, (ii) gunky possible worlds are accommodated by classical mereology, and (iii) the thesis that the actual world is gunky is taken seriously as a scientific hypothesis.\(^{10}\) I will consider each of these claims in turn along with the evidence Schaffer uses to support it.

Schaffer demonstrates that the notion of concrete matter being infinitely divisible has roots in philosophy dating back to the pre-Socratic philosopher Zeno of Elea.\(^{11}\) Zeno, who was the student of Parmenides, offered paradoxes aimed at exposing motion and change as illusions. One such paradox imagines a racecourse starting at point \(a\) and ending at point \(b\). There is a midpoint \(m_1\) halfway between \(a\) and \(b\), and one must pass \(m_1\) to complete the race. However, there exists another midpoint \(m_2\) between \(a\) and \(m_1\). Another midpoint \(m_3\) can be drawn between \(a\) and \(m_2\), and so on *ad infinitum*. Another historical example is Pascal who imagined a cosmos

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\(^{10}\) Ibid., 61.
\(^{11}\) Ibid.
with “an endless sequence of microcosms.”\textsuperscript{12} Our cosmos would be made out of quasi-atoms each of which was a duplicate of our cosmos generating an infinite downward chain. Such a world would clearly be gunky as any given object in that world would be said to have proper parts. From these two arguments, it should at least be granted that gunky worlds are conceivable. However, I follow Schaffer in believing that conceivability alone does not establish metaphysical possibility. He writes, “I do not think that conceivability entails metaphysical possibility, but I do think that inconceivability entails metaphysical impossibility. So at the very least there is no inconceivability argument against gunk.”\textsuperscript{13} Having established that gunky worlds are conceivable, Schaffer can move to show that classical models of mereology can accommodate gunky possible worlds.

In regard to the possibility of gunky worlds given various mereologies, Schaffer writes:

\begin{quote}
[T]here are gunky models of classical mereology. So to the extent that the models of classical mereology represent metaphysical possibilities, it follows that gunk is metaphysically possible. Indeed, most alternative views of mereology—save the radical nihilist view on which there are no proper parthood relations at all—allow for gunk.\textsuperscript{14}
\end{quote}

Any world that can be modeled on a given mereology is a possible world with respect to that mereology. Since gunky worlds can be modeled on classical mereology (and many non-nihilistic alternatives), gunky worlds are possible with respect to classical mereology (and many of its non-nihilistic alternatives).

Perhaps the best way to guarantee the existence of a universal fusion \(u\) is to accept classical mereology with its principle of unrestricted composition. James Van Cleve explains the principle of unrestricted mereological composition:

\textsuperscript{12} Ibid.
\textsuperscript{13} Ibid.
\textsuperscript{14} Ibid.
[G]iven any collection of objects, no matter how disparate or widely scattered, there is a further object composed of them all. For example, there is an object composed of my left tennis shoe and the lace that is threaded through its eyelets—so far, perhaps, no surprise. But there are all of the following objects as well: the object composed of the lace threaded through my left shoe and the lace threaded through my right shoe; the object composed of the Eiffel Tower and the tip of my nose; the object composed of the moon the six pennies scattered across my desktop. For any objects a through z, whatever and wherever they may be, there is an object having those objects as its parts.\textsuperscript{15}

Just as the principle of unrestricted composition will apply to any finite collection of objects, the principle of unrestricted composition applies to infinite collections. It should now be clear how the principle of unrestricted composition can accommodate gunky possible worlds. It accommodates the possibility of gunky objects by allowing fusions of both finite and infinite cardinality to form composite objects. Moreover, even if the world is gunky, the principle of unrestricted composition guarantees a universal fusion $u$ of all concrete objects in the cosmos. Schaffer’s endorsement of classical mereology appears to stem from the fact that “[c]lassical mereology—with its axiom of unrestricted composition—guarantees the existence of a unique fusion of all concrete objects.”\textsuperscript{16} Unrestricted composition does have the strange consequence of positing composite objects with parts that are spatially distant and have no intuitive connection. Nonetheless, unrestricted composition represents a principle of composition that can accommodate the possibility of gunky objects and avoid needlessly adding fundamental entities to our ontology.

The fact that gunky worlds are conceivable and that unrestricted composition can accommodate such worlds goes some way towards motivating the claim that gunky worlds are metaphysically possible. Adding to this motivation, Schaffer writes, “Finally—and perhaps most


\textsuperscript{16} Schaffer, “Monism: The Priority of the Whole,” 64.
tellingly—gunk is scientifically serious.”\textsuperscript{17} The empirical sciences have not disproven the hypothesis that the actual world is gunky and, further, have offered some positive indications that infinite descent may be the case for our actual world.\textsuperscript{18} Schaffer points out that it remains unclear whether (i) a completed microphysics will ever be achieved, (ii) a completed microphysics would posit the existence of particles, or (iii) a completed microphysics with particles would equate those particles with mereological atoms.\textsuperscript{19} In regard to the point raised in (i), physicist Brian Greene writes that “history has taught us that every time our understanding of the universe deepens, we find yet smaller microscopic ingredients constituting a finer level of matter.”\textsuperscript{20} Each time we assert that we have found the smallest level of concrete entities, we find “they are one more layer in the cosmic onion,” and even smaller entities remain.\textsuperscript{21} Turning to (ii), Schaffer notes, “The claim that a complete microphysics must be a theory of particles, much less of discrete entities at all, is just an article of faith.”\textsuperscript{22} He cites contemporary interpretations of quantum field theory and physicists who caution against the presupposition that the fundamental level in a completed microphysics need be a material particle.\textsuperscript{23} Quantum field theory is a contemporary development of quantum physics aimed at reconciling quantum mechanics with Einstein’s theory of special relativity.\textsuperscript{24} According to such a theory, a completed microphysics might only posit fields at the lowest levels rather than material particles. Finally, with respect to (iii), Schaffer asserts that a completed microphysics that posited particles would

\textsuperscript{17} Schaffer, 61.
\textsuperscript{18} Schaffer, “From Nihilism to Monism,” 184.
\textsuperscript{19} Schaffer, “Is There a Fundamental Level?” 502-506.
\textsuperscript{21} Ibid., 142.
\textsuperscript{22} Schaffer, “Is There a Fundamental Level?” 504.
\textsuperscript{23} Ibid., 505.
do so because “one can tell a complete causal story with particles as protagonists.”\textsuperscript{25} But this does not entail that such particles represent the fundamental level, as even these particles may be subject to what Schaffer calls boring divisions, wherein “the characteristic properties of all the parts supervene on the characteristic properties of their wholes.”\textsuperscript{26} Combined together, (i), (ii), and (iii) do not establish that the actual world is gunky. However, the aim is to use the fact that the hypothesis that our world is gunky is a scientifically serious one in order to motivate the weaker claim that gunky objects are at least metaphysically possible. I believe that Schaffer has adequately motivated the metaphysical possibility of gunky worlds. Indeed, many contemporary metaphysicians take gunky worlds to be fairly uncontroversial. Nonetheless, before continuing to the next chapter, I will briefly engage a nihilist argument against the metaphysical possibility of gunky worlds.

Recall that nihilist mereology claims that there are only atomic simples, there are no composite objects, and nothing has proper parts. Since all objects in a gunky world have proper parts, nihilism cannot be true of a gunky world. J.R.G. Williams has provided a defense of nihilism by arguing that the possibility of gunky objects is an illusion generated by imagining a world in which a certain type of mereological nihilism is true.\textsuperscript{27} William promotes a theory called emergence nihilism. Emergence nihilism is the view that both what we take to be macro-physical objects and what we take to be micro-physical objects are all atomic simples lacking proper parts. Williams offers the following summary of emergence nihilism:

\begin{quote}
Emergence nihilism is a form of non-microphysical mereological nihilism. It involves exotica in the form of an abundance of simple objects, many of which are partially co-located with each other. The world, according to this nihilist, may contain table, chair, and dog shaped and sized simples; and the table-like simples
\end{quote}

\textsuperscript{25} Schaffer, “Is There a Fundamental Level?” 505.
\textsuperscript{26} Ibid.
may share their locations with four leg-shaped simples and a table-top shaped simple, as well as with many micro-particles.

Emergence nihilism claims that all the entities countenanced by our common-sense ontology and everyday language are objects. Additionally, anything that could be considered a proper part of an object on a non-nihilistic principle of mereology is also said to be an object. However, such objects would not be proper parts of anything since nihilism denies part-whole relations. Consider the example of a table in the quote above. The table, the legs of the table, and the tabletop are all considered to be atomic simples without any mereological parthood relations between them. This is achieved by, instead, claiming that the table, the legs of the table, and the tabletop are such that the latter two objects are co-located with the first. The table is an atomic simple which is partially co-located with both the table legs and the tabletop. Alan Gibbard and others have found nothing implausible in the idea that distinct concrete objects that do not stand in part/whole relations can be co-located.\textsuperscript{28} Emergence nihilism proposes that these types of worlds are being imagined when we take ourselves to be conceiving gunky worlds, and that truly gunky worlds are not metaphysically possible. In a pseudo-gunky world in which emergence nihilism is true, there would be no bottom level. However, all concrete objects would be atomic simples without proper parts. So, the emergence nihilist could still hold that the atomic simples are the most fundamental level in such a world. If emergence nihilism can be successfully motivated, there will no longer be an argument against a nihilist principle of composition from the metaphysical possibility of gunky objects.

Williams’ argument engages the possibility of gunky worlds on the grounds that its only support lies in its conceivability. Indeed, he declares on behalf of the nihilist, “Conceivability

arguments for gunk have been thrown at her all evening: now it is her turn.”29 Were conceivability the only option for defending gunky worlds, Williams’ illustration of emergence nihilism could hold more force. But, as demonstrated in this section, the metaphysical possibility of gunky worlds enjoys more support than its mere conceivability. Williams’ example of emergence nihilism is also problematic in regard to pursuing a parsimonious ontology with respect to what is fundamental. Monism posits a fundamental level at the top and, therefore, only posits one fundamental entity among concrete objects. Traditional atomistic theories normally assume the smallest level of material division to be fundamental. Such a theory may posit a finite or infinite plurality of fundamental atomic simples but they may come in only a finite number of types. On traditional views of atomistic pluralism, everyday composite objects such as tables and chairs exist; they just are not fundamental. On the standard nihilist view, everyday composite objects such as tables and chairs are said to be useful fictions rather than actual objects. But, both traditional versions of atomistic pluralism and non-emergence nihilism share the common view that the most fundamental level consists in the smallest bits of matter. Emergence nihilism, on the other hand, must be willing to accept that anything that could be considered an object is an object and, furthermore, that any such object is also fundamental. In fact, according to the emergence nihilist, every concrete object is a fundamental entity and, if a possible world were such that matter could be infinitely divided, every division would represent the discovery of a new level which was both atomic and fundamental. This explosion of types of fundamental objects should disturb anyone concerned with finding the simplest workable ontology. Given that gunky possible worlds and emergence nihilism are incompatible, and the fact that the possibility of gunky worlds enjoys more motivation than mere conceivability, we have reason to favor the metaphysical possibility of gunky worlds over the metaphysical possibility of emergence.

29 Williams, “Illusions of Gunk,” 504.
nihilism. As such, I submit that emergence nihilism poses no real threat to the metaphysical possibility of gunky worlds.

I have shown in this chapter how Schaffer endeavors to argue for priority monism from the metaphysical possibility of gunky worlds:

1. Gunky worlds are metaphysically possible.
2. Necessarily, if pluralism is true, then atomism is true.
3. If gunky worlds are metaphysically possible, then it is possible that atomism is false.
4. Monism or pluralism, whichever is true, is true in all possible worlds.
5. So, monism is true in all possible worlds.

As far as each premise seems independently plausible, the argument has a high level of *prima facie* plausibility. The claim that gunky worlds are metaphysically possible enjoys a considerable amount of support from both philosophy and the empirical sciences. We also have reason to believe that, necessarily, pluralism would entail atomism. This claim can be motivated by noting that the pluralist has no viable alternative besides atomism. Since gunky worlds are incompatible with atomism, the fact that gunky worlds are metaphysically possible entails that atomism—and hence pluralism—cannot be a metaphysical necessity. Granting that pluralism and monism, whichever is true, is true as a matter of necessity, we infer that monism is necessarily true and, therefore, that priority monism is true of the actual world. In the next chapter, I offer a counterargument from Bohn wherein he attempts to parallel Schaffer’s argument for priority monism from the metaphysical possibility of gunky worlds to create an argument for pluralism from the metaphysical possibility of junky worlds. Bohn’s argument takes a similar form and trades on analogous premises as the argument offered by Schaffer. However, since the two
conclusions will be incompatible, any reason for thinking that Bohn’s argument is sound will be reason for thinking that Schaffer’s is not. So, in addition to presenting Bohn’s argument, I will also examine which of the two arguments we should ultimately accept, arguing that the key premise of Schaffer’s argument (i.e. that gunky worlds are metaphysically possible) enjoys better support.
Chapter 4

The Problem of Junky Possible Worlds

Section 4.1: An Argument for Pluralism from Junky Possible Worlds

Even confined to discussions of mereological composition, the term ‘junk’ has been employed to pick out very different notions. Williams refers to the possible infinite explosion in the number of atomic simples resulting from emergence nihilism as “a lot of ontological junk.”\(^1\) Van Cleve uses the term in a similar fashion to describe the possible infinite explosion resulting from the acceptance of unrestricted mereological composition.\(^2\) However, I will use the term ‘junk’ in the manner originating with Schaffer.\(^3\) A junky world is such that every object in that world is a proper part of some other object in that world. A world \(w\) is junky if and only if for every concrete object \(x\) in \(w\), there exists a concrete object \(y\) in \(w\) such that \(x\) is a proper part of \(y\).

Reversing the image of gunky worlds of infinite descent, junky possible worlds would be worlds of infinite ascent. Bohn demonstrates that, following the form of Schaffer’s argument for priority monism from the possibility of gunky worlds, one can argue for pluralism from the metaphysical possibility of junky worlds. In this section, I will summarize Bohn’s argument that the existence of junky worlds entails the truth of pluralism. In the second section, I will move to examine Bohn’s argument that the metaphysical possibility of junk worlds entails that principles of

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1 Williams, “Illusions of Gunk,” 505.
3 Schaffer, “Monism: The Priority of the Whole,” 64.
composition are contingent. In the third section, I will argue that Bohn’s case for junky possible worlds is unconvincing. Guiding this analysis will be Bohn’s claim that “the possibility of junk is independently plausible to the same degree as the possibility of gunk is independently plausible.” To allow for both gunky and junky worlds, Bohn must make untenable claims about the nature of composition. I will show that his argument has not lent the plausibility to junky possible worlds that is enjoyed by gunky possible worlds. Given that composition is necessary, it would appear that the existence of gunky possible worlds is incompatible with the existence of junky possible worlds. I will argue that one should deny the metaphysical possibility of junky worlds and, therefore, Bohn’s argument against priority monism.

Recall Schaffer’s argument in Chapter 3 that the metaphysical possibility of gunky worlds would entail the truth of monism:

1. Gunky worlds are metaphysically possible.
2. Necessarily, if pluralism is true, then atomism is true.
3. If gunky worlds are metaphysically possible, then it is possible that atomism is false.
4. Monism or pluralism, whichever is true, is true in all possible worlds.
5. So, monism is true in all possible worlds.

Bohn’s argument for pluralism from the possibility of junky worlds aims to parallel every line of Schaffer’s argument for priority monism from gunky possible worlds. The following reconstruction of Bohn’s argument from his article “Monism, Emergence, and Plural Logic” will contain four claims, each of which is independently comparable to a parallel claim from

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4 Bohn, “Monism, Emergence, and Plural Logic,” 216.
Schaffer’s argument as presented in Section 3.1.⁵ Bohn’s argument begins analogously to Schaffer’s by supposing:

6. Junky worlds are metaphysically possible.

Bohn proposes to show that junky possible worlds are conceivable by citing the historic examples of Zeno and Pascal offered by Schaffer and then modifying them to illustrate junk:

But now, in a slightly modified version of this thought-experiment, suppose everything is extended and everything extended is one of two extended halves that compose one extended thing. This generates a reversed Zeno sequence with no end. Or else suppose our universe is a miniature replica universe housed in an ‘atom’ of a bigger replica universe, which again is a mini replica universe housed in an ‘atom’ of another bigger replica universe and so ad infinitum. If you can coherently conceive of this, presumably you have conceived of what amount to a junky world.⁶

Consider a possible world \( w_1 \) that fits the description offered by the first thought-experiment. Following from the description, any potential candidate for a universal fusion \( u \) in \( w_1 \) would actually turn out to be one half of a larger concrete object. That object, in turn, would be one half of an even larger object and so on ad infinitum. Now, consider another possible world \( w_2 \) that fits the second description. The same problem arises when trying to locate a universal fusion in the world described by Bohn’s second scenario. Since every universe is housed within an infinite chain of larger universes, we never reach a top level. With thought-experiments for the conceivability of junky possible worlds that mimic Schaffer’s thought-experiments for the conceivability of gunky possible worlds, Bohn concludes, “There simply seems prima facie to be no substantial difference between conceiving of a junky world and conceiving of a gunky world.”⁷ I will return to consider some other motivations Bohn gives for the metaphysical

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⁵ Ibid., 214-217.
⁷ Ibid., 201.
possibility of junky worlds in section 3.3. But let us now turn to the next premise in Bohn’s argument for pluralism.

The second premise will match Schaffer’s claim that pluralism entails atomism. The pluralist arguably has no viable alternative to atomic simples in regard to a fundamental level among actual concrete objects. Any non-atomic molecule the pluralist might propose as fundamental would seem to be an *ad hoc* choice. Likewise, the monist has no viable alternative to the universal fusion $u$ that could plausibly serve as the most fundamental level among actual concrete objects. Bohn uses the term ‘mereological Uism’ to refer to the theory entailed by monism that the entire concrete cosmos is a single composite object and is fundamental among concrete objects.\(^8\) As a parallel of 2 from Schaffer’s argument we have the following premise:

7. Necessarily, if monism is true, then mereological Uism is true.

There is no possible world $w$ where the monist could name something besides $u$ as fundamental among concrete objects in $w$, because anything besides a universal fusion of all concrete objects would leave some non-fundamental objects ungrounded. But all concrete objects in a possible world $w$ must be accounted for in the chain of grounding relations. So, monism will entail mereological Uism.

Our next premise will be an attempt at paralleling premise 3 from Schaffer:

8. If junky worlds are metaphysically possible, then it is possible that mereological Uism is false.

Recall that, in a junky possible world, any given concrete object will be a proper part of some larger object. Yet, a universal fusion, by definition, cannot be a proper part of anything, as it is a fusion of all concrete objects in a possible world. Schaffer attempted to provide several arguments for the claim that a universal fusion $u$ is guaranteed in every possible world. I believe

\(^8\) Ibid., 215.
that the best way to guarantee the existence of \( u \) is to endorse unrestricted mereological composition. However, let us temporarily endorse the claim that there might be a possible world that lacks a universal fusion \( u \) because every concrete object in that world is a proper part of some other object in that world. It seems clear that the existence of such a junky world would entail that mereological Uism is false in that world.

From 7 and 8 we can infer that it is at least possible for mereological Uism to be false. If mereological Uism can be false, then, following from 7, we can conclude that monism can be false and, therefore, is not true as a matter of necessity. What remains is the final assumption from Schaffer’s argument. Assumption 4 can be plugged directly into Bohn’s argument; however, I repeat it now as the final premise of Bohn’s argument:

9. Monism or Pluralism, whichever is true, is true in all possible worlds.

From 6, 7, and 8, we have concluded that monism is not true in every possible world. Junky worlds are possible and mereological Uism cannot be true in junky worlds. Since mereological Uism is false in some possible world, monism is false in some possible world. Combining that inference with the disjunction in 9, we may conclude:

10. So, pluralism is true in all possible worlds.

Of course, since pluralism is true necessarily, it follows that pluralism is true of the actual world. Considering the other background assumptions that one or more objects must be fundamental among actual concrete objects and that pluralism and monism are exclusive theories, we may also conclude that monism is necessarily false.

Assuming momentarily that Bohn has succeeded in motivating the claim that junky worlds are, like gunky worlds, metaphysically possible, the respective arguments from Schaffer and Bohn have reached contradictory conclusions. Schaffer indicates that monism is true as a
matter of metaphysical necessity while Bohn claims the same of pluralism. In this respect, Bohn’s reply to Schaffer is somewhat perplexing as it cannot possibly serve as a positive argument for pluralism so long as Bohn gives no reason for thinking that one or more of Schaffer’s premises are false or that Schaffer’s conclusion will fail to follow from his premises. By borrowing the form of Schaffer’s argument, Bohn has guaranteed that the invalidity of Schaffer’s argument entails the invalidity of his own. Furthermore, Bohn’s premises are modeled off of Schaffer’s premises. As such, if Bohn claims some part of Schaffer’s argument to be unsound, his own argument may face similar criticisms. Bohn is not unaware of this difficulty writing, “[T]he pluralist should thus remain completely unmoved by the argument from the possibility of gunk.” The argument is apparently only intended to create an impasse. Bohn’s argument from junky possible worlds cannot serve as a positive argument for pluralism unless he is willing to deny one or more of Schaffer’s premises or the validity of Schaffer’s argument as a whole. Nonetheless, it has created an inconsistency with the conclusion of Schaffer’s argument that requires explanation. In the next section, I discuss a serious issue for premise 6 of Bohn’s argument, the claim that junky worlds are metaphysically possible.

Section 4.2: Necessary Principles of Composition versus Junky Possible Worlds

In order for us to accept the metaphysical possibility of junky worlds without simultaneously denying the metaphysical possibly of gunky worlds, Bohn argues that we must adopt a principle of composition which is contingent. That is, the conditions under which

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9 The notable exception would be 1 and 5 which, though expressing converse possibilities, are supported by different reasoning. So, one could deny either 1 or 5 without denying the other. Indeed, my response to Bohn’s argument will be a denial of 5.
11 Bohn mentions that he would consider denying that metaphysical grounding goes in the same direction in every possible world and the assumption that pluralism entails atomism. However, since he give no argument in favor of denying these assumptions and, furthermore, employs the same sort of reasoning for his own proof, I see no reason to deny either claim.
composition occurs will change from one possible world to another. I begin by outlining Bohn’s reasons for making this initial claim. My intent is to motivate Bohn’s claim that allowing for both gunky and junky possible worlds is incompatible with a necessary principle of composition as having some prima facie plausibility. I conclude the section by arguing that, even if we accept Bohn’s claim, contingent principles of composition are untenable. Instead, we ought to resolve the dilemma by reexamining the claim that gunky and junky worlds are both metaphysically possible.

A proponent of junky possible worlds should reject classical mereology with its unrestricted principle of composition, because unrestricted composition would guarantee a universal fusion $u$ in any world in which it held. So, in rejecting unrestricted composition, the proponent of junky possible worlds must offer some alternative principle of composition. Bohn considers the principle that “all and only finite collections compose something.” Thus, if a world were such that, for example, every concrete object was half of a larger concrete object in an infinite chain, there would be no universal fusion $u$. This possible world would be junky and irreducibly plural. However, this principle rules out the possibility of gunky worlds. A gunky world requires a principle of mereology that allows fusions of infinite cardinality. This follows from the fact that any object in a gunky possible world will be a fusion of infinite cardinality. Bohn writes, “[T]here is, as far as I can see, no reason whatsoever to think that this principle could trump the possibility of gunky worlds.” An unrestricted principle of composition is incompatible with junky worlds and a principle of composition that allows only fusions of finite cardinality is incompatible with gunky worlds. Bohn wants to allow for the metaphysical possibility of both gunky and junky worlds. So, he contends that “the principle of composition

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12 Bohn, “Must There Be a Top Level?” 194.
13 Ibid., 195.
must be a contingent matter, differing from world to world.” ¹⁴ If principles of composition are contingent, there may be gunky possible worlds with fusions of infinite cardinality and junky possible worlds that lack fusions of infinite cardinality despite being worlds of infinite cardinality. These two varieties of possible worlds would have different principles dictating when composition occurs. A contingent principle of composition is also needed to accommodate worlds that are both gunky and junky at the same time. Bohn dubs the state-of-affairs wherein all objects in a possible world both have and are proper parts a “hunky” possible world. ¹⁵ This possible world would be accommodated by a principle of composition stating, “all and only things that are not co-finite compose something.” ¹⁶ A concrete object \( x \) is said to be co-finite if and only if the complement of \( x \) (i.e. the set of all concrete objects in the same world as \( x \) that are not parts of \( x \)) is finite. According to this principle, if \( x \) and \( y \) compose some object \( o \), then the complement of \( o \) must be infinite in cardinality. This principle of composition would allow infinite descent all the way up and down. According to this principle, every composition would leave out an infinity of concrete objects. However, the principle cannot be necessary, because it disallows composition in any possible worlds where there is a finite cardinality of objects (which plausibly exist), since any such world would require that composition occurs between co-finite objects. Because Bohn thinks that gunky, junky, and hunky worlds are all possible, he concludes that we should reject any necessary principle of composition and accept that, when composition does and does not occur varies from world to world.

While Bohn’s main line of defense for a contingent principle of composition stems from a need to accommodate the existence of both gunky and junky worlds, he attempts one other defense of contingent composition. Bohn uses ‘(C)’ to refer to “the conditions under which some

¹⁴ Ibid.
¹⁵ Ibid., 198.
¹⁶ Ibid.
things compose something."\textsuperscript{17} Bohn first considers the principle that all and only things satisfying conditions (C) compose something. Consider two possible worlds, \( w_1 \) and \( w_2 \). In \( w_1 \), some collection of objects \( xx \) fuses to create composite object \( o \) under conditions (C). In \( w_2 \), the collection of objects \( xx \) (or, if you prefer, a duplicate collection \( yy \) of collection \( xx \)) exists and satisfies conditions (C). However, in \( w_2 \), the collection does not compose \( o \) (or a duplicate thereof). According to Bohn, to argue that the collection under conditions (C) must form composite object \( o \) in \( w_2 \) implies “a very mysterious necessary connection ... between two non-identical things.”\textsuperscript{18} Bohn is here appealing to the Humean view that no necessary connections exist between distinct objects. Collection \( xx \) is said to be distinct from composite object \( o \). To take it that collection \( xx \) (or a duplicate thereof) must compose a composite object \( o \) (or a duplicate thereof) in any possible world where condition (C) holds is to postulate a necessary connection between \( xx \) and \( o \). Bohn concludes that anyone who accepts the Humean dictum should accept that composition is contingent. So, Bohn argues for a contingent principle of composition wherein possibly, though not necessarily, all and only things satisfying conditions (C) compose something. This would allow for collection \( xx \) in \( w_1 \) to compose object \( o \) under conditions (C) while collection \( xx \) in \( w_2 \) fails to compose \( o \) under the same conditions (C).

That collection \( xx \) in \( w_1 \) composes \( o \) while failing to compose \( o \) in \( w_2 \) remains intuitively strange. If collection \( xx \) is under the same conditions (C) in both worlds, why should it compose something in \( w_1 \) but not in \( w_2 \)? Anticipating such a challenge, Bohn writes, “I think this is a good question, but it simply amounts to the question ‘In virtue of what do composite objects exist?’.”\textsuperscript{19} Bohn is correct to note that anyone who wants to discuss either the existence or non-existence of composite objects has

\textsuperscript{17} Ibid., 195.
\textsuperscript{18} Ibid., 196.
\textsuperscript{19} Bohn, “Must There Be a Top Level?” 197.
an obligation to discuss in virtue of what composite objects exist. But it seems as though most philosophers who discuss composition, Schaffer included, have a keen idea of what conditions they count as necessary for a composite object to exist. The nihilist claims that nothing has proper parts. So, the nihilist answers the question by saying that composite objects do not exist. Other philosophers, perhaps most notably van Inwagen, have argued that the only composite objects are living organisms. On van Inwagen’s view, the only objects in the world are organic composites and atomic simples. So, van Inwagen answers that composite objects exist by virtue of their being alive. The view Schaffer supports, unrestricted composition, requires that any collection of objects—even collections of infinite cardinality—form a composite object. This allows for the possibility of gunky objects while also preserving commonsense composite objects such as tables and chairs. On unrestricted composition, the answer is that composite objects exist by virtue of the fact that any collection of two or more concrete objects in the same world creates a composite object.

There are many other principles of composition that have been suggested in the literature. In addition to answering the question of what conditions are needed for composition to occur, the answer that every one of these principles provides is intended to be metaphysically necessary. That is, all of potential principles of composition discussed throughout the relevant literature are intended to be principles explaining when composition occurs in every case and in every possible world. Bohn is correct to say that the question of when composition occurs is faced by anyone discussing composition. However, he is incorrect to imply that a number of plausible answers have not been given. By claiming that principles of composition are contingent, it seems that

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21 Unrestricted composition, of course, is not without counter-intuitive results. Since any collection of objects makes a composite object, the tip of my right index finger, the lid of my coffee cup, and the 8th moon orbiting Neptune form a composite object. This would certainly fail to be a commonsense object, yet it is implausible to accept unrestricted composition without accepting the existence of such objects.
Bohn’s view is the one weakened by an inability to provide an account of when composition occurs. Bohn must explain why, e.g., a collection of objects arranged chair-wise would meet the sufficient conditions to form a chair in one possible world, but those objects (or duplicates thereof) arranged chair-wise and meeting the same set of conditions in another world could fail to compose anything. Bohn asserts that all philosophers discussing composite objects need to give an account of in virtue of what composite objects exist. While other philosophers have given plausible answers, Bohn has failed to do so. In holding that there is no necessary principle of composition, one must hold that whether or not composition occurs in any case is a brute and unanalyzable fact.

I conclude that Bohn’s effort at reconciling the metaphysical possibility of gunky and junky worlds through a contingent principle of composition fails. I do think that both gunky and junky possible worlds can be accommodated by positing brutal composition. Brutal composition simply claims, “There is no true, non-trivial, and finitely long answer to [when composition occurs].” While this may initially appear to be a claim that composition is contingent, it is instead a claim that there is a necessary principle of composition which is “an infinitely long list of every possible situation involving some [collection of objects] that compose a further object.” Thus, even though brutal composition can accommodate the possibility of both gunky and junky worlds, it hardly represents a very satisfying answer to the question of in virtue of what composition occurs. And, while junky worlds could be accommodated by a necessary principle of brutal composition, the proponent of junky worlds would need a strong and independently plausible argument in favor of brutal composition to make his view plausible given the possibility of gunky worlds.


23 Ibid., 352.
Section 4.3: An Asymmetry in Evidence for Gunky and Junky Worlds

Among Schaffer’s motivations for the assertion that gunky worlds are metaphysically possible is that they are conceivable and that the hypothesis that the actual world is gunky is taken to be a scientifically serious hypothesis. Bohn declares, “There is no convincing asymmetry between the two positions” with respect to the evidence for the metaphysical possibility of gunky worlds and the metaphysical possibility of junky worlds. But should we accept such a claim? I will begin by addressing Schaffer’s initial reaction to junky possible worlds. Then, I will consider Bohn’s insistence that there exists equal motivation for accepting the metaphysical possibility of junky worlds as there exists for accepting the metaphysical possibility of gunky worlds. I will ultimately conclude that a significant asymmetry exists in regard to the evidence for the two claims, with the evidence weighing more heavily towards the metaphysical possibility of gunky worlds. And, as the existence of junky worlds appears to be incompatible with the existence of gunky worlds (at least if we assume that principles of composition are necessary whenever true), I argue that the stalemate between Schaffer and Bohn is best resolved by denying the metaphysical possibility of junky worlds.

Schaffer believes there to be an “asymmetry of existence” which guarantees the existence of $u$ but does not guarantee the existence of atomic simples:

The asymmetry is that there must be an ultimate whole, but there need not be ultimate parts. In other words, though atomless gunk is metaphysically possible, worldless junk—the converse of gunk, in which everything is a proper part of something—is metaphysically impossible … there are gunky models of classical mereology, but no junky models. Indeed, a mereologically maximal element is the only individual that classical mereology guarantees on every model. If such models correspond to possibilities, then the only guaranteed existence is the One.  

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While Schaffer is correct to point out that classical mereology guarantees the existence of a universal fusion, I will discuss at least two elements of this passage which appear to beg the question against the pluralist.

Schaffer refers to the converse of ‘atomless gunk’ as ‘worldless junk’. The assumption at work here is that a possible world without a universal fusion is not a world at all, since there is no singular object to call ‘the world’. Yet, recalling Bohn’s counter to Schaffer’s argument from emergent properties in Chapter 2, the pluralist has license to employ plural logic and, therefore, allow that properties can be assigned to irreducibly plural collections of objects. So, Bohn objects, “The term ‘world’ might simply be a plural term standing for all concrete existing things as a genuine plurality.”\(^{26}\) As such, the monist cannot assume the necessity of a universal fusion based solely on the claim that ‘the world’ must refer to a singular entity. The other way in which Schaffer begs the question against the pluralist is that he assumes that the pluralist must accept some form of classical mereology. But, if classical mereology guarantees a universal fusion but not mereological atoms, the pluralist only need reject classical mereology. Schaffer’s argument is question-begging in this sense because, as Bohn notes:

\[ T \text{he pluralist could argue perfectly analogously from the necessity of some non-classical junky mereological system containing atoms, call it JM: JM logically guarantees the existence of mereological atoms, but not that of \(u\). That is, JM has junky models, but no gunky models.}^{27}\]

Neither the pluralist nor the monist stands to gain an advantage by assuming, without argument, a mereology that automatically excludes the other theory from being correct. However, more

\(^{26}\) Bohn, “Monism, Emergence, and Plural Logic,” 215.
\(^{27}\) Ibid., 216.
must be said about the mereology necessary for junky possible worlds in light of the fact that Bohn also endorses the possibility of gunky worlds.28

Bohn has given us two thought-experiments that purport to show that junky possible worlds are conceivable. Indeed, we have prima facie reasons for accepting that the worlds described in his thought-experiments are junky. However, under more careful considerations, it becomes less clear that junky possible worlds are really conceivable. Duncan Watson has questioned the conceivability of junky possible worlds as imagined in Bohn’s thought-experiments. Watson offers the following as an obviously invalid argument that he takes to parallel the reasoning in Bohn’s description of putatively junky worlds:

Take a set, say {}, and suppose that it’s a member of some bigger set, {{}}, and suppose that that set is a member of some bigger set still, {{{}{}}}, and so on ad infinitum. Call the sets in this series ‘the constructed sets’. It follows that there’s no set that contains all the constructed sets, because there’s no constructed set that isn’t a member of some other constructed set.29

The argument is invalid because there is still a set that is not a member of any constructed set, namely the non-constructed set that contains all and only the constructed sets as members.30 This same notion can be applied directly to the thought-experiments offered by Bohn. In regard to the example of our universe being nested inside an infinite chain of larger cosmoses:

Bohn’s argument fails because there’s nothing logically inconsistent about a world that consists of an infinite hierarchy of nested universes and a universal object that is the mereological composition of those nested universes.31

Watson also considers several potential responses on behalf of Bohn, but finds all to be question begging.32 For example, Bohn might counter by saying that any potential candidate for a

28 Ibid., 216-217.
30 Ibid., 80.
31 Ibid.
32 Ibid., 81.
universal fusion \( u \) in a junky possible world \( w \) will be a proper part of some other object. Therefore, whatever was called \( u \) cannot really be a universal fusion. But we are trying to see whether junky possible worlds are conceivable so, “simply asserting that there’s a possible world at which every object is a proper part isn’t a justification for that claim.”

Watson’s primary goal in attacking Bohn’s argument that junky possible worlds are conceivable is to defend necessary unrestricted composition against Bohn’s claim that we must accept a contingent principle of composition. Recall that Bohn has shown that the metaphysically possibility of both gunky and junky worlds is incompatible with a necessary principle of unrestricted composition. Further, Bohn argues that both gunky and junky worlds are conceivable. Bohn employs this conceivability to argue that we must accept a contingent principle of composition. If Watson has been successful in undermining Bohn’s claim that junky worlds are conceivable, Bohn no longer has support for the claim that we ought to accept a contingent principle of composition. While Bohn has responded to Watson’s criticism of his argument against a necessary principle of composition, his response does not ultimately address the underlying concern that Bohn’s thought experiments do not establish that junky worlds are conceivable. It is worth noting that Watson’s criticism does not by itself do anything to disprove the metaphysical possibility of junky worlds. However, it does undermine Bohn’s claim that junky worlds are conceivable.

Finally, it is worth noting Bohn’s response to the claim that our actual world is gunky is taken to be a scientifically serious hypothesis that has not been disproven and even enjoys some empirically-informed evidence in its favor. Bohn concedes that “the possibility of gunk might be and have [sic] been taken more seriously in physical science, but that is no good guide to mere

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33 Ibid.
metaphysical possibility.”35 Neither Schaffer’s nor Bohn’s arguments require as a premise that the actual world is either gunky or junky. So, Bohn’s contention is that the epistemic possibility that the actual world is gunky has no bearing on whether or not there are junky possible worlds.36

I would submit that there is a meaningful difference in the scientific seriousness of the respective possibilities of gunky and junky worlds. Bohn is dismissive of the fact that gunky worlds are taken more seriously than junky worlds by physicists. Since the discussion at hand involves metaphysical rather than physical possibility, physics is claimed to be a poor source of evidence. Bohn is correct insofar as something could be metaphysically possible without having any scientific plausibility as a hypothesis about the actual world. However, it should lend a tremendous amount of credibility to someone supporting the metaphysical possibility of gunky worlds that the hypothesis that our world is gunky is a scientifically serious hypothesis. If the actual world were gunky, then gunky worlds would obviously be metaphysically possible. Any evidence from physics that the actual world is gunky should be added to the existing evidence that gunky worlds are possible. Therefore, we should not be dismissive of this difference in the respective evidence for the metaphysical possibility of gunky and junky worlds.

We should reject Bohn’s claim that no asymmetry exists between arguments for the metaphysical possibility of gunky worlds and arguments for the metaphysical possibility of junky worlds. Following from Watson’s criticisms, it is not entirely clear that junky worlds are conceivable. A further asymmetry between the two positions is the fact that the hypothesis that the actual world is gunky is being taken seriously as a scientific possibility. Bohn is aware and has attempted to address both of these issues; however, I contend that, when faced with the

36 To be clear, that the actual world is junky enjoys epistemic possibility. However, it does not possess the same level of scientific viability.
incompatibility of the existence of both gunky and junky worlds, the available evidence weighs heavily in favor of rejecting the metaphysical possibility of junky worlds.

Section 4.4: Closing Remarks

Schaffer moves from the possibility of gunky worlds to the necessity of priority monism. Bohn duplicates the form of Schaffer’s argument but moves from the possibility of junky worlds to the necessity of pluralism. The conclusions from the two respective arguments contradict one another. One way to overcome the contradiction is to deny either the possibility of gunky worlds or the possibility of junky worlds. Holding that both gunky and junky worlds are metaphysically possible is incompatible with any viable necessary principle of composition. Bohn tries to overcome this by claiming that principles of composition should be contingent. This would allow for the existence of both gunky and junky worlds, but contingent principles of composition are highly implausible. Upon further investigation, I have shown that there exists a significant asymmetry between the respective evidence for the possibility of gunky and junky worlds. It is not entirely clear that junky possible worlds are even conceivable. Further, the hypothesis that our world is gunky is a scientifically serious hypothesis. In light of the evidence available and in order to overcome the inconsistency between the respective conclusions reached by Schaffer and Bohn, it is reasonable to accept that there are no metaphysically possible junky worlds. Therefore, I submit that there is more reason to accept Schaffer’s argument for priority monism from the possibility of gunky worlds than there is to accept Bohn’s argument for pluralism from the possibility of junky worlds.
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