Organon F 32 (3) 2025: 262–299 ISSN 2585-7150 (online)
https://doi.org/10.31577/orgf.2025.32301

RESEARCH ARTICLE

Source of Reality/Causal Capacity: Outside of the Priority Chain?

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Received: 7 June 2024 / Revised: 23 March 2025 / Accepted: 31 March 2025

Abstract: I will consider two views about the structure of reality: metaphysical foundationalism (all grounded entities are fully grounded in ungrounded entities) and metaphysical infinitism (there are infinite chains of grounding that lack a foundation). Foundationalists motivate their view by appealing to an intuition that there must be a fundamental level that is the source of reality (Schaffer) or causal capacity (Trogdon) of grounded entities because a grounded entity inherits its reality or causal capacity from its ground and there would be a vicious infinite regress otherwise. I will argue that this argument is not successful as the source of reality or causal capacity of an infinite chain can be its cause. For example, this source can be the direct physical cause, the first physical cause or a Prime Mover. A vicious infinite regress is avoided this way too because there is no transference of the same status ad infinitum.

Keywords: Fundamentality; metaphysical foundationalism; metaphysical infinitism; vicious infinite regress.

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1. Introduction

In this paper, I will consider two views: metaphysical foundationalism (all the chains of ontological dependence terminate in fundamental entities, or all derivative entities are fully grounded in fundamental entities) and metaphysical infinitism (there are infinite chains of grounding that lack a foundation). To begin with, I will explain the notion of 'grounding' by mentioning how it is used in the literature. Then, I will talk about an argument for the existence of a fundamental level. A foundationalist intuition is that there must be a source of reality (Schaffer, 2009; 2010; 2016) or causal capacity (Trogdon 2018) because a grounded entity inherits its reality or causal capacity from its ground. If infinitism was true, "[b]eing would be infinitely deferred, never achieved" (Schaffer 2010, 62). I find this argument unpersuasive as the source of reality or causal capacity of an infinite chain can be outside of it. This source can be the cause of the infinite chain. I will argue that the cause of a grounded object can also explain why the grounded object is real and has causal capacity; nothing is left unexplained if there is no fundamental level. A vicious infinite regress can be avoided this way too. So, if this foundationalist argument is the only reason why somebody is foundationalist, they should stop endorsing foundationalism.

2. Grounding

Metaphysical foundationalism and metaphysical infinitism are usually described by using the notion of 'grounding'. Therefore, examining the literature concerning grounding before going into more detail about the two aforementioned views is helpful.

Grounding accounts differ on what they take as the relata of the grounding relation. While some have taken the relata to be sentences or facts (Fine 2001; 2012; Rosen 2010; Audi 2012; Dasgupta 2014), Schaffer (2009; 2012; 2016) has taken the relata to be members of any two ontological categories. Following Heil (2003; 2012), I consider objects property-bearers (i.e., substances). Objects are things like elementary particles and living organisms that possess certain properties. A fact can also be described as a state of affairs or a particular way that the world is. Examples of facts are the fact

that a person is happy and the fact that a table is brown. I will assume that Schaffer's account is correct and present it here. One motivation for following Schaffer's account is that it allows grounding between objects. As one of the issues in this paper is to decide whether there is a fundamental level of objects, this is a very relevant account of grounding.

According to Schaffer (2009), what exists are the grounds/fundamental entities, grounding relations[1], and the grounded entities that are generated from fundamental entities through grounding relations. While there is an abundant roster of grounded entities, they are grounded on a sparse basis. Dependent entities are not fundamental. The grounded entities are an ontological free lunch.

Schaffer (2009) has defined the notions of a fundamental entity (primary, independent, ground entity) and derivative entity (secondary, dependent, grounded entity) in terms of grounding (ontological dependence, priority in nature). "Fundamental: x is fundamental $=_{df}$ nothing grounds x [...]. "Derivative: x is derivative $=_{df}$ something grounds x" (Schaffer 2009, 373).

Schaffer (2010) has argued that the priority relations among concrete objects form a well-founded partial ordering. There is a partial ordering structure because priority relations are irreflexive, asymmetric, and transitive.[2] [3] There is also a well-founded ordering: all priority chains terminate

[1] Not everybody explains grounding as a relation. For Fine (2001, 16; 2012, 43) and Correia (2010), grounding is best regarded as a sentential operator that connects the sentences that state the ground to the sentence that states what is grounded. Dasgupta (2014) has also taken grounding to be a sentential operator but claimed that a plurality of sentences can ground a plurality of sentences.

[2] This is the most prominent way to understand grounding. Schaffer (2012; 2016) has changed his mind and given a contrastive treatment of grounding. The contrastive treatment involves viewing grounding not as a binary relation between two actual nonidentical entities but as a quaternary relation, including a non-actual grounding contrast and a non-actual grounded contrast. E.g., *"The fact that φ rather than φ^* grounds the fact that ψ rather than ψ^*"* (Schaffer 2012, 130). Likewise, irreflexivity, asymmetry, and transitivity can be understood as holding between differences. We do not need to discuss the details here as they will not affect my argument.

[3] All of these are controversial though. For instance, Jenkins (2011) has argued that grounding is reflexive. Barnes (2018) has argued that grounding is nonsymmetric. Bennett (2017) has responded to them and defended the claim that grounding

in something fundamental.[4] There are basic actual concrete objects because priority chains terminate.

Grounding can also be explained by comparing it with causation. Schaffer (2012; 2016) has argued that grounding is analogous to causation. Both are relations of generation, partial orders, and back explanation. Both causal and grounding relations can be described similarly using terms such as 'generation', 'production', 'making', and 'dependence'. Concerning partial ordering, both of these relations are irreflexive, asymmetric, and transitive binary relations. Concerning explanation, we can explain why something is the case by giving a causal or grounding story.[5] [6]

Grounding has been considered as one among many building relations (Bennett 2011b; 2017). For Bennett (2017 32), "all building relations are

i. directed, in that they are antisymmetric and irreflexive,
ii. necessitating, roughly in that builders necessitate what they build, and
iii. generative, in that the builders generate or produce what they build. Built entities exist or obtain because that which builds them does".

According to Bennet (2017), building relations form a unified family. When we talk about building, we quantify over the unified class of building

relations are irreflexive and asymmetric. However, she has denied that grounding relations are transitive.

[4] How exactly we should define well-foundedness is controversial (see Rabin and Rabern 2016; Dixon 2016). I will present Dixon's view later in this paper. Tahko (2018) has noticed that while some foundationalists, such as Schaffer, use a set-theoretic notion of well-foundedness, others do not (e.g., Rabin and Rabern, Dixon). I will not choose between these notions, as my arguments in this paper do not rely on any specific notion of well-foundedness.

[5] Schaffer (2012; 2016) has argued that both causal and grounding relations are best formalised via structural equation models which incorporate contrastive information (these models were firstly introduced to explain causation). He has claimed that structural equation models for grounding provide more structure than the mere partial ordering mentioned by Schaffer (2009). This account will be relevant in section 5; so, it will be briefly described there.

[6] This is what Schaffer has believed. Still, it may be the case that some things may admit only one type of explanatory story, even if others might admit to either. The objection I will give does not need to agree with this view of Schaffer.

relations. There is not a single very abstract building relation that is either more fundamental than the specific building relations or the only building relation. For example, grounding, causation, and composition were conceived as building relations. Considering building relations a unified family will be relevant in section 5.

The aforementioned point (iii) will be especially relevant. Bennett (2017, 184) has claimed that "all building relations are generative in the sense that they license 'makes it the case' and 'in virtue of' talk". This is neutral on why such talk is licensed. It can be licensed because "some relations are generative, and some are not; it's just primitive" (Bennett 2017, 184). Otherwise, it may be the case that "there is no such relation, only the talk. It is just a matter of convention that certain relations license certain ways of talking" (Bennett 2017, 184). "On the first approach, the world decides which relations count as building relations" (Bennett 2017, 185).

Whether building talk is licenced by something metaphysical or is merely a matter of convention will be relevant in section 5. The objection to the foundationalist argument will be developed differently depending on how we explain building talk. But before we see this, metaphysical foundationalism and metaphysical infinitism will be explained.

3. Metaphysical Foundationalism and Metaphysical Infinitism

Grounding is used to describe two major views about the universe's structure: metaphysical foundationalism and metaphysical infinitism.[7] While foundationalism says that all grounded entities are ultimately grounded in ungrounded entities, infinitism does not.

According to metaphysical foundationalism (Cameron 2008b; Schaffer 2009; 2010; 2016; Bennett 2011a; Trogdon 2017; 2018), there is a fundamental entity (priority monism), or there are several fundamental entities (priority pluralism).[8] For example, a priority monist could claim that the whole

[7] Metaphysical coherentism (see Bliss 2014) is another view, but it is out of the scope of this paper.

[8] I presuppose that zero grounding is not the correct way to talk about objects. Objects are either grounded or ungrounded. According to Fine (2012, 47-48),

universe is an ungrounded object, and a priority pluralist could claim that elementary particles are ungrounded objects. Ungrounded objects are not grounded in anything else. More precisely, foundationalism claims that all grounded entities are directly or indirectly (i.e., by transitivity) grounded in ungrounded entities. For Schaffer (2009), all priority chains terminate. The ordering of grounding is well-founded: a priority chain is well-founded, iff it terminates in something fundamental/ungrounded. An ungrounded entity or entities can also be called a 'foundation'. A well-founded chain is not infinite at the fundamental end but may consist of infinite grounded entities. Priority pluralism can be represented this way: a grounded object is grounded in its grounds, and arrows represent grounding relations (e.g., Y_1 grounds X).

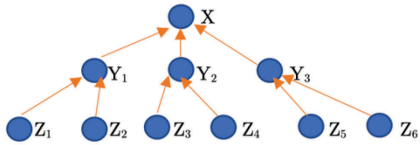

Figure 1: Priority Pluralism

X is a grounded object, Ys are its grounds, and Zs are the grounds of Ys.

On the contrary, metaphysical infinitism (Bohn 2018; Morganti 2009; 2014; 2015) claims that there are limitless chains of grounding that lack a foundation. An entity is grounded in another; the second is grounded in

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something is zero-grounded, iff it is grounded in nothing. It is generated from a zero number of objects. Zero-grounded and ungrounded are different things. *"The case in which a given statement is zero-grounded, i.e. grounded in zero antecedents, must be sharply distinguished from the case in which it is ungrounded, i.e. in which there is no number of statements – not even a zero number – by which it is grounded. We may bring out the difference by means of an analogy with sets. Any non-empty set {a, b,. . .} is generated (via the "set-builder") from its members a, b,. . .. The empty set { } is also generated from its members, though in this case there is a zero number of members from which it is generated. An urelement such as Socrates, on the other hand, is ungenerated; there is no number of objects – not even a zero number – from which it may be generated"* (Fine 2012, 47).

An empty set is generated by its zero-ground. 'Socrates is identical to Socrates' is zero-grounded: it is grounded in nothing at all. However, an ungrounded truth or object is not generated at all.

another, and so on ad infinitum. The ordering of grounding is not well-founded as the priority chains do not terminate in something fundamental. The entities in question could be facts, objects, or other ontological categories. Concerning objects, different infinitist versions can be suggested. Whether grounding relations go from the larger to the smaller or the opposite is controversial. An infinitist may claim that the world is gunky: every object is a whole grounded in its proper parts. There is no bottom level. There is an infinite descent of levels, and each further level is grounded in the former. Another infinitist option is to claim that the world is junky: every object is a proper part of something, and the former is grounded in the latter. Alternatively, an infinitist could believe both and argue that the world is hunky (both gunky and junky) (e.g., Bohn 2018).[9] A gunky infinitist world can be represented this way, where the small circles represent that the chain continues ad infinitum:

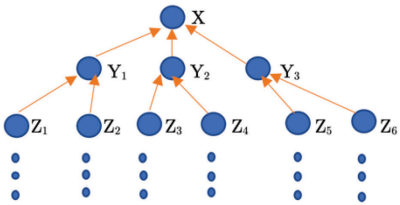

Figure 2: Gunky Infinitism

4. Source of Reality or Causal Capacity: Fundamental Objects

Metaphysical foundationalists (Cameron 2008b; Heil 2003; Schaffer 2010; 2016; Trogdon 2018) have argued that metaphysical foundationalism is true. It has been argued that there is a need for a source of reality or

[9] According to Bohn (2018, 175–76), in hunky worlds, grounding is asymmetrical. Still, someone could believe that hunky worlds result in violations of the asymmetry of grounding. The objection that I will give does not depend on whether grounding is asymmetrical, and so, I will not choose between these two views.

causal capacity[10] to avoid a vicious infinite regress and only foundationalism can provide us with one. In what follows, I will present this argument. In the next section, I will argue that it doesn't work.

Cameron (2008b) has endorsed an intuition that a fundamental layer of reality must exist. This intuition arises when we consider the whole as grounded in its parts. According to this intuition, grounding cannot go on ad infinitum: all the grounded objects must be grounded in a fundamental level. If metaphysical infinitism was true, "composition could never have got off the ground. If the existence of each complex object depends for its existence on the existence of the complex objects at the level below, and if we never reach a bottom level, then it is hard to see why there are any complex objects at all" (Cameron 2008b, 6). If everything were grounded in something else, "there would be no grounding to being: there would be no end to explanation when we try to explain why what there is exists" (Cameron 2008b, 6-7). "There must be a metaphysical ground, a realm of ontologically independent objects which provide the ultimate ontological basis for all the ontologically dependent entities" (Cameron 2008b, 8).

Schaffer (2010) has also shared this intuition.

> If one thing exists only in virtue of another, then there must be something from which the reality of the derivative entities ultimately derives" (Schaffer 2010, 37). If infinitism was true,

[10] Mentioned philosophers who use this terminology do not define what it is to be a source of reality or causal capacity. I take it to be something that can be an ultimate explanation: something that can be used to end an explanation of why something is real or has causal capacity. Given a source, we have ultimately explained why something is real or has causal capacity. This source can show why there is no need to keep asking why something is real or has causal capacity. A source of reality or causal capacity can be such an ultimate explanation because it is the reason that something is real or has causal capacity.

It could be asked why X is real or has causal capacity at time *t*. Later, I will argue that X's source of reality or causal capacity can occur earlier than *t*. By using the expression 'source of reality or causal capacity', I do not presuppose that the object that needs a source and its source exist simultaneously. I will argue that this presupposition is unwarranted.

I will mainly talk about a grounded object's source of reality or causal capacity. I will make it clear when this is not the case.

> "[b]eing would be infinitely deferred, never achieved (Schaffer 2010, 62).
>
> Grounding must be well-founded because a grounded entity inherits its reality from its grounds, and where there is inheritance there must be a source. One cannot be rich merely by having a limitless sequence of debtors, each borrowing from the one before. There must actually be a source of money somewhere. (Schaffer 2016, 95).

It has been argued that if infinitism is true, there is a vicious regress; so, we should reject infinitism. For Schaffer (2016, 95), "a regress counts as vicious if and only if there is an endless chain of dependency with transference of the relevant status". This sort of transference leads to the need for a source. In the grounding case, there is such a transference of reality: the grounded entity exists in virtue of its grounds. "That is why a source of reality is needed, in order for there to be anything to transfer" (Schaffer 2016, 96).

Instead of talking about the property of being real to develop the foundationalist intuition, some foundationalists have developed this intuition by talking about causal powers (Heil 2003; Trogdon 2018). Heil (2003, 19) has been sceptical about the possibility of a universe with no fundamental level. He has confessed ignorance as to how it is supposed to work given the dependence of higher levels on those below them: something, it seems, must ground the superstructure. If someone thinks that higher-level causal relations depend on lower-level causal relations, it is not clear that these could fail to bottom out. If the only unattenuated causal relations are those at the basic level, there had better be a basic level.

Trogdon (2018) has developed this kind of reasoning. According to him, instead of focusing on the property of being real, we should focus on the property of having the capacity for causal activity (causal capacity for short). "An entity has this property just in case it has causal powers, dispositions to enter into particular sorts of causal transactions" (Trogdon 2018, 191).

My objection against Schaffer's and Trogdon's arguments, which I will develop in the next section, does not depend on whether we talk about the source of reality or the source of causal capacity. So, I will remain neutral

between these two options and not mention Trogdon's objection against the foundationalist argument that mentions reality inheritance.

Trogdon (2018) has argued for causal foundationalism. "Causal foundationalism: necessarily, any nonfundamental entity with causal capacity is fully grounded by fundamental entities" (Trogdon 2018, 191). Causal foundationalism is true because the following three premises are true:

> The causal inheritance premise: necessarily, if A is nonfundamental and has causal capacity then A inherits its causal capacity from whatever fully grounds it.
> The source of causal capacity premise: necessarily, if A inherits its causal capacity then there are Δ that are a source of A's causal capacity (i.e. A inherits its causal capacity from Δ, and no entity among Δ inherits its causal capacity).
> The causality/fundamentality premise: necessarily, if Δ are a source of A's causal capacity then the entities among Δ are fundamental and Δ fully ground A" (Trogdon 2018, 192).

The causal inheritance premise is inspired by Kim's (2005) causal exclusion argument. This premise is supported by two principles. First, Kim's causal exclusion principle states that no property instance has simultaneous full causes. Second, the causal closure of grounding principle: if a property instance has a full non-fundamental cause, then whatever fully grounds that cause is also a full cause of the property instance. The premise can be supported by considering an instance of φ (lowercase Greek letters range over properties) that is non-fundamental and fully causes an instance of property ψ. Following the causal closure of grounding, there is a property instance that fully grounds the φ-instance and fully causes the ψ-instance. It follows that the ψ-instance has two simultaneous full causes. Following the causal exclusion principle, no event has two simultaneous full causes. Therefore, by reductio, it is false that there is an instance of φ that is both non-fundamental and fully causes an instance of ψ.

Concerning the source of causal capacity premise, Trogdon (2018) has believed that the rationale for it appeals to general considerations about inheritance. Specifically, it appeals to the following principle:

> The inheritance principle: necessarily, if A inherits φ then there are Δ that are a source of A's φ-ness (i.e. A inherits φ from Δ and no entity among Δ inherits φ) (Trogdon 2018, 186).

The source of causal capacity premise is motivated by the inheritance principle, which is assumed to be true. Trogdon (2018) has mentioned that Schaffer (2010) has presented some good reasons for the truth of the inheritance principle (reasons I have presented above).

Concerning the causality/fundamentality premise, Trogdon (2018) has given some reasons to believe it. Given the causal inheritance premise and that none of the entities among Δ has their causal capacity by inheritance, the entities among Δ are fundamental. Given that A inherits its causal capacity from Δ, A is fully grounded by Δ. We get this result because the following thesis is true: it is necessary that if A inherits its causal capacity from Δ, then the latter fully ground the former. This thesis can be supported by paradigmatic cases of causal capacity inheritance, such as when relevant property instances characterise the same entity (e.g., DNA molecules and a gene), when relevant property instances characterise distinct but materially coincident entities (e.g., a lump of clay and a statue), and when relevant property instances characterise objects at different levels of mereological aggregation (e.g., carbon molecules and a diamond). In these cases, the inheritors are fully grounded by the entities from which they inherit. This gives us a reason to believe that it is necessary that if A inherits its causal capacity from Δ, then the latter fully ground the former.

In the next section, I will present a new objection against Schaffer's and Trogdon's views.[11] According to it, even if we have an intuition or a belief that there must be a source of reality or causal capacity in order to avoid a vicious infinite regress, this source can be found outside the grounding chain. In other words, a vicious infinite regress of reality/causal capacity can be avoided without endorsing foundationalism.

[11] Different objections have been stated against the foundational intuition. Bliss (2013; 2014) has argued that Schaffer is begging the question. Bohn (2018) has claimed that he does not share the same intuition as Schaffer. Morganti (2014; 2015) has rejected the inheritance account. These objections are out of the scope of this paper.

5. Alternative Sources of Reality and Causal Capacity

I am not persuaded that our intuitions can be used to build a sound argument for foundationalism. What is behind our foundationalist intuitions is our search for a source of reality or causal capacity. This is shown explicitly in Trogdon's (2018, 192) "causal inheritance premise: necessarily, if A is nonfundamental and has causal capacity then A inherits its causal capacity from whatever fully grounds it". However, it seems that these sources can be found even if infinitism is true. In what follows, I will mention 'source of RCC', where 'RCC' means 'reality or causal capacity'. I will do so because independently of whether foundationalists choose to speak about reality or causal capacity, a similar objection against their view can be stated. According to the foundationalist argument, given the need for a source of RCC and given the truth of a specific account of grounding, foundationalism follows. I will argue that even if there is a need for a source of RCC and that particular grounding account is true, alternative plausible metaphysical views can be suggested. Instead of searching for the source of RCC inside the priority chain, we could search for this source outside the priority chain. The cause of a grounded entity can be its source of RCC. More specifically, alternative plausible sources can be the physical cause of each grounded entity (the direct[12] cause or the initial cause of the universe) or God.[13]

Different objections against the foundationalist argument can be stated depending on which account of causation is assumed to be true. As a result, I will examine different accounts of causation and argue that the foundationalist argument fails in every case. In the first part of this section, I will

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[12] E_1 directly causes e_2, iff e_1 causes e_2 and there is not an event e_3 between e_1 and e_2 such that e_1 causes e_3 and e_3 causes e_2. E_1 indirectly causes e_2, iff there is an event e_3 between e_1 and e_2 such that e_1 causes e_3 and e_3 causes e_2.

[13] Nothing related to my argument relies on the existence of a God. If someone does not like to assume the existence of God, one cannot use this as an objection to my view. Alternative *physical* sources of RCC can be used and will be presented below to show that foundationalism is not the only way to avoid a vicious infinite regress. Examples that involve God's intervention are only given to clarify my claims.

assume the truth of a generative and power-conferring account of causation (such as the productive account of causation or the dispositionalist account of causation[14]). By 'generative', I mean that causes generate the effects: they bring about the existence of the effects. In this section, I will use 'generative' in its metaphysical reading; that is, causation talk is licensed because some relations are generative, and some are not. Building talk is not merely a matter of convention. By 'power conferring', I mean that the cause transmits causal powers to the effect (that is, the effect has its causal powers in virtue of its cause). For example, object Y has power P_2 because it was caused by object X with power P_1.

This account of causation also allows that the cause transmits reality to effect (i.e., the effect is real in virtue of its cause), but I will talk about causal powers in what follows just for ease of exposition. There is a similarity between causation and grounding: both are building relations (see Bennett, 2011b; 2017). If a generative, power-conferring account of causation is true, alternative sources of RCC can be the immediate/direct physical cause of a grounded object, the first physical cause of the universe, or God (I will give examples below).

In the second part, I will assume that a non-generative and non-power conferring account of causation is true: the structural equation models account of causation. This is the account that Schaffer endorses. It is a non-generative account of causation because according to it, causes do not bring about the existence of their effects. It is also non-power conferring because causes do not transmit causal powers to their effects according to it. What I will say will apply to other non-generative and non-power conferring accounts of causation (such as the counterfactual account of causation). If a non-generative, non-power conferring account of causation is true, a source of RCC may not be needed. Maybe we live in an eternal universe (i.e., a universe that always existed), and so, there is no need for a source of RCC. Every entity always had its RCC. There was no time when an entity came into existence, and causal powers were transferred into it. So, we should not search for an entity that is the source of RCC of a grounded entity.

[14] For productive accounts of causation, see Fair (1979) and Castaneda (1984). For dispositionalist accounts of causation, see Bird (2007), Heil (2003; 2012), and Shoemaker (1980; 1998; 2007).

Otherwise, God can be an alternative source of RCC. In this case, there is a kind of causation that is generative and power conferring (God's causation), even though physical causation is non-generative and non-power conferring. This God could be the Prime Mover, a four-dimensionalist God, or the occasionalist God. Maybe the Prime Mover created the first physical event, and everything happens without God's intervention after that, or God created everything from the beginning (a kind of four-dimensionalism), or the occasionalist God creates the universe every single moment (detailed examples will be given below).

I will not argue that one of these metaphysical views is correct. Instead, I will argue that different metaphysical views avoid vicious infinite regresses and therefore, we should not suppose that only foundationalism does so. Further arguments are needed to show why foundationalism should be preferred.

Let's examine the aforementioned metaphysical views in more detail through some examples. Consider the case of a physical cause being the source of RCC. It may be asked why a statue is real and has a specific causal capacity (being solid, being white, etc.). Two possible answers are: because of its creator[15] (its cause) or its parts (its atoms, its grounds). Schaffer and Trogdon worry that if its grounds have further grounds ad infinitum, we face a vicious infinite regress. However, I believe that the vicious infinite regress can be avoided if the statue's creator is the source of RCC. The creator made it the case that the statue is real and has a specific causal capacity. We do not need to look at further causes in the past to explain the RCC of the statue. This can be the case even if the statue's grounds have further grounds ad infinitum.

[15] More precisely, the person who was creating the statue. At some points, I will talk as if an object is the cause of an effect, but this can be considered a shorthand for the event that caused the effect (that can also be an event). Events can be the relata of causal relations. This does not influence my argument. Following Kim (1984), I conceive an event as the exemplification of a property by an object at a time. If we talk about an event being the source of RCC, both events and objects can be conceived as fundamental ontological categories. Then, events may be mentioned to show how a vicious infinite regress of grounded objects or events can be avoided. For example, an event e_1 at time t_1 can cause an event e_2 at time t_2. E_2 consists of a grounded object O having a property P at time t_2. O's source of RCC is e_1.

I argue that a statue gets its reality from its creator—the maker of the statue. However, someone could find this example unconvincing[16] since, in the statue case, what the creator does is rearrange various components that are already real (the material from which the statue is made) into a new order. If so, is it not more reasonable to say that the statue gets its reality from its parts or material, which are already real, rather than from its creator or rearranger?

I could say that without facing any problem. Let's say that the statue is created at time t_2. It has certain parts at that time: particular objects. At time t_1, those objects interact in specific ways that cause the statue's creation at t_2. Those objects can be the source of RCC of the statue. Alternatively, those objects and their causal interactions at t_1 can be the source of RCC of the statue. The statue's source of RCC could be the event that consists of those objects and their causal interactions. It could be asked which parts are relevant. Especially in a metaphysical infinitist ontology. The elementary particles? Something even smaller that we do not know that it exists? I respond: the elementary particles could be a source, and their parts could be another source, and the parts of these parts can also be a source, and so on. I believe that an object can have many sources of RCC. I find this kind of overdetermination unproblematic, and I will say more about it later in subsection 5.4.

Otherwise, we could say that the statue's source of RCC is the event of the creator arranging and causally interacting with the objects that become the parts of the statue. This event, which is a candidate for being a source, includes all the objects that contributed to the statue's creation. It includes both the creator and the objects that ground the statue. The event mentioned above could also be the source of RCC without facing any problems.[17]

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[16] Thanks to an anonymous reviewer for raising this objection.

[17] Objection of an anonymous reviewer: I do not think that either the maker of the statue or any other physical cause can create something real out of nothing or give reality to something that is not already real. Namely, if the statue maker had no real parts at her disposal, how could she make a statue? The author does acknowledge that God might be a source of reality, and that makes sense. Hence, given the previous, I doubt that anything other than God can play the role of a cause that is a source of reality in the way the author requires. Response: I think the statue's

Still, someone may argue that to really explain why the statue is real and has causal capacity, we should search for the desires and beliefs of the creator that caused him to make the statue, and we should also find out how these desires and beliefs were formulated, and so on ad infinitum, and this leads to a vicious infinite regress of causes.

At this point, two responses are available: (a) there is not actually a vicious infinite regress, and (b) a God or a first physical cause can be alternative sources of RCC. I will argue for (a) in the next subsection. The main claim is that there is an infinite regress of causes, but there is no transference of the same status ad infinitum. (b) can be sketched here: I believe that worries about vicious infinite regress of causes can be avoided if God is the source of RCC of the statue.[18] It may be the case that a Prime Mover

maker can give reality to something not already real: the grounded object called 'statue'. Before the creation of the statue, there were only its parts. After the arrangement of the parts, a new object is created. A grounded object. The statue. As I will explain later, a first physical cause, something that was not created, may also be an ultimate source or explanation of why something has RCC. All the objects may originate from this first cause. If we believe that only something uncreated can explain why things have RCC, either a God or a first physical cause can play this role.

[18] It could be claimed that this is another form of foundationalism: God is the foundation. This could be the case, especially if 'causation' and 'grounding' refer to the same building relation (see Bennett (2011b) for this view, even though she changed her mind later (Bennett 2017)). If someone wants to call this view foundationalism, despite the existence of infinite priority chains, I do not see any problem with that. My main claim here is not to defend infinitism but to claim that the postulation of ungrounded objects is not the only way to avoid a vicious infinite regress. That is why I restrict the term 'foundationalism' only to the view that there is a fundamental level of objects. In other words, I restrict "metaphysical foundationalism" to the view that all grounded entities are grounded in ungrounded entities. There is another way to express the aim of this paper: I argue that considerations concerning avoiding vicious infinite regresses show that the world has a foundation. However, they do not help us to decide what this foundation is. I do not argue for metaphysical infinitism or a specific metaphysical view. I do not argue that a first cause is explanatorily advantageous compared to other foundationalists' accounts. Instead, I argue that considerations about infinite regress can lead to different metaphysical views

created the universe, and as a result, the chains of causal dependence stop at some point in the past. The Prime Mover is supposed to have the power to create things ex nihilo. Unlike physical entities, a Primer Mover does not need to be transferred RCC from somewhere else to have RCC. Otherwise, it may be the case that occasionalism is true: every moment, God creates the universe and brings about the RCC of each object. This way, the vicious infinite regress is avoided too. Creation, in both cases, is a causal process.

If somebody is sceptical of the existence of a God, an initial/first physical cause can be considered as the source of RCC. It may be the case that the universe has a beginning. At that time, there was a first object that directly or indirectly caused the existence of every other object, and so, this object is the source of RCC of every other object. This object has always existed and has not received its RCC from anything else. As a result, there is not a vicious infinite regress: the chains of causal dependence stop at the beginning of the universe. Sometimes, I will mention God just for ease of exposition. It could be replaced by 'first physical cause'.

What Schaffer and Trogdon need for their argument to be successful is the truth of the claim that only through ungrounded objects we can avoid a vicious infinite regress. However, as the above examples show and I will argue below, there are other possible scenarios that avoid this problem, and it is not obvious that we should prefer the foundationalist's suggestion.

5.1. Generative, Power Conferring Accounts of Causation

I will talk here about the alternative sources of RCC that rely on a generative and power-conferring account of causation, and below, I will consider whether non-generative and non-power-conferring accounts of physical causation can be used to develop the foundationalist argument and respond to my objections. Let's further develop the abovementioned claims by remembering the foundationalist's worry. A foundationalist worries that if metaphysical infinitism was true, a priority chain would not have a source of RCC, and it would be a mystery why anything exists. They have the intuition that there must be a source of RCC, a ground that metaphysically

and postulating the existence of grounded objects is just one solution among others. More needs to be said to decide which view is the correct one.

explains why anything else exists or has causal capacity. Cameron (2010), Schaffer (2010) and Trogdon (2017) have argued that the whole cosmos is the source, and Cameron (2008a) has considered a plurality of atoms as the source. All of them searched for the source inside the priority chains.

But maybe the source can be outside the priority chain. To see this, let's consider again the causal inheritance premise that Trogdon accepted[19]. "The causal inheritance premise: necessarily, if A is nonfundamental and has causal capacity then A inherits its causal capacity from whatever fully grounds it" (Trogdon 2018, 192).

I do not think A can inherit its causal capacity only from whatever fully grounds it. Instead, I believe that the following conditional is true: if A is nonfundamental and has causal capacity, then A inherits its causal capacity from its cause or its full ground[20]. This conditional reveals another way that a nonfundamental entity can have a source of RCC. The cause of A (B) can be its source, and the explanation of why A is real and has a certain causal capacity can end there. What really matters is that an explanation ends. Whether it stops in an ungrounded physical object or a cause does not matter.[21] It is not advantageous to have one over the other.

Assume that infinite priority chains exist. Each grounded entity may inherit RCC from its cause. The source of RCC of an infinite chain can be its cause. The cause causes the existence of each object in the infinite chain and makes these objects have the causal capacities they do[22]. It explains the nature and causal capacities of all these objects because of that. There is no extra need for something inside the chain that is also the source of its RCC.

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[19] My following remarks would be similar, even if I discussed Schaffer's version of this argument.

[20] This conditional implies different possibilities depending on whether we understand "or" as inclusive (overdetermination) or exclusive (no grounding relations, uncaused priority chains). These possibilities will be discussed below.

[21] If what is needed is an ultimate explanation, either an ungrounded ground or an uncaused cause, God or a first physical cause could be the uncaused cause and the alternative source of RCC. I will develop this claim below.

[22] It could be objected that the RCC of any item in the chain will be overdetermined, as it is produced both vertically (within the chain) and horizontally (by God). I reply to this objection on page 27.

To see that the source of RCC of a grounded object can be its cause, let's digress and examine fully pedestalled chains presented by Dixon (2016). These chains were presented to argue for a specific definition of well-foundedness[23], but they are also relevant to the current topic. The structure of these chains is the following, where orange arrows symbolise grounding (e.g., Y_2 grounds Y_1):

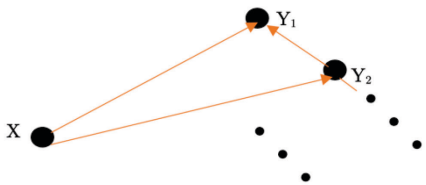

Figure 3: A Fully Pedestalled Chain

All the Ys and the X are facts. Even though this pedestalled chain contains a non-terminating grounding chain, each non-fundamental fact it includes is fully grounded by the fundamental fact X. Each Y_i is fully grounded by each Y_{i+1} and is also fully grounded by X. X is fundamental. Each fully pedestalled chain contains a non-terminating grounding chain. Still, they are well-founded because every non-fundamental fact is fully grounded by a fundamental fact. For Dixon (2016, 446), "the principle that best captures the claim that grounding is well-founded [is] […] (FS) Every non-fundamental fact x is fully grounded by some fundamental facts Γ".

Now, instead of facts, imagine that X and all the Ys are objects[24] (X may be an ungrounded particle, and Y_1 may be an infinitely divisible

[23] They were used to argue against a set-theoretic notion of well-foundedness. This notion does not allow infinite priority chains to be well-founded because they do not terminate in fundamental entities. However, Dixon (2016) has argued that some infinite chains, such as fully pedestalled chains, are acceptable for the metaphysical foundationalist as every non-fundamental entity is fully grounded by fundamental entities, and there is still a source of reality for every non-fundamental entity.

[24] Remember that they can also be events. It does not influence my argument. Talking about events may be preferred because they are considered the relata of causal relations. I talk about objects just for ease of exposition.

particle). Y_1 is a composite object, Y_2 refers to the objects that ground Y_1, Y_3 refers to the objects that ground Y_2, and so on. Also, imagine that X is the cause of the non-terminating grounding chain. The arrows beginning from X represent a causal relation.[25] The other one still represents the grounding relation. I call what we imagine now a 'Fully Pedestalled Causal Chain 1' (FPCC1, see figure 4 where blue arrows symbolise causation[26]). X seems to be the source of RCC of all the Ys. Being is achieved in virtue of X. Every Y exists, is real, and has the causal capacity it does in virtue of X. This seems to be sufficient to metaphysically explain the reality and causal capacity of all the Ys. Their metaphysical explanation ends in the X.

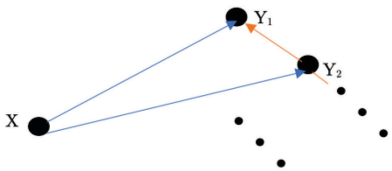

Figure 4: A Fully Pedestalled Causal Chain (FPCC1)

If we are sceptical of objects being the relata of causal relations, the X and the Ys can be understood as events. We can think of God, the creator of the universe, who caused everything else to exist either directly or indirectly. A particular event, God causing the existence of the first gunky object Y_1 (i.e., event x, God creating a gunky object at time t_1, causing event y_1, consisting of the physical object Y_1 being real at time t_2), is the

[25] An anonymous reviewer finds it unclear why X in Figure 4 is the cause of every individual item in the chain (one-to-infinity causation). It seems better to them if X is instead the cause of the chain as a whole (one-to-one causation).
I do not have any problem with this alternative account of causation. The source of RCC can still be X.

[26] In figure 4 and figure 5, I use singular variables to refer to grounds for convenience only. All grounds can be understood plurally. That is, each variable that refers to a ground can refer to multiple entities. Grounding may be a many-one relation: many entities ground one entity.

source of RCC of all physical objects and events. For example, Y_1 causing the existence of other gunky objects is happening because God is its source of RCC. Another example would be God directly causing the existence of several gunky objects, and the interaction between these objects causes the existence of other gunky objects.

These infinite chains seem well-founded in a sense close to what foundationalists are saying. Remember the definitions of well-foundedness we have seen already. For Schaffer, a priority chain is well-founded, iff it terminates in something fundamental. For Dixon (2016, 446), "the principle that best captures the claim that grounding is well-founded [is] […] (FS) Every non-fundamental fact x is fully grounded by some fundamental facts Γ". Both Schaffer and Dixon want something that is the source of a priority chain. If we understand 'fundamental' as 'ungrounded', then not all kinds of fully pedestalled causal chains are well-founded as X may be a part of an infinite chain, and therefore, it will be grounded in something else (we will examine a chain like this one below). Still, these chains are well-founded in a close sense. They are well-founded* because they terminate in and are fully caused by their causes.[27] Their causes are their source. That is why they terminate there. The core motivation for endorsing foundationalism is having a source that provides an explanation that ends somewhere. However, we can have such a source even without foundationalism, and so it seems that we have lost the reason to advocate foundationalism.

It could be objected that the source of RCC of a grounded object cannot be its direct cause. Consider a grounded object, A, and its direct cause (B). It may be argued that B cannot be the source of RCC of A because B is real and has causal capacity in virtue of something else: its direct cause (C). C is also real

[27] Objection: The infinite chains are well-founded* in a sense different from the senses used by Schaffer and Trogdon. This makes all the discussion a verbal dispute! Reply: I do not think so. The dialectic does not go this way: we need well-foundedness; we do not have it, but at least we have well-foundedness*, and so, infinitism is good enough. Instead, the dialectic goes this way: Schaffer, Trogdon, and I believe that a grounded object must have a source of RCC, and I argue that foundationalism is not the only theory that provides such a source. As a result, considerations about vicious infinite regresses do not show that foundationalism is true.

Alternatively, we could say that infinite chains are not well-founded but are fully caused, and therefore, the lack of well-foundedness does not pose a problem.

and has causal capacity in virtue of something else, and so on ad infinitum. So, the explanation never stops, and there is a vicious infinite regress.

But I think that my view does not lead to a vicious regress. There is a difference between a grounding chain and a causal chain. In a grounding chain, there is transference of the same RCC all the time, but in a causal chain, there is a different transference every time (or most of the time).

For example, B can be the source of RCC of A, and the explanation ends there. If we ask why B has the causal capacity it does, then we ask for an explanation of a different causal capacity. While A may have causal powers P, B may have causal powers Q. So, we are not always asking for an explanation of the same causal capacity. Of course, we could ask why B has the causal capacity it does, but then we are not concerned with A anymore. We are not searching anymore for the source of causal capacity of A. We are searching for the source of causal capacity of B. For example, consider again the case of the statue and its creator: the statue and its creator have different causal powers.

We cannot say something similar about grounding. In the grounding case, the problem is that we constantly search for the source of the same causal capacity and never reach a point where this explanation stops. Consider the case of an object that has a certain mass in virtue of its parts that have the same mass, and these parts have this mass in virtue of their parts that have the same mass, and so on ad infinitum. The explanation of why the object has a certain mass always moves somewhere else.

Also, consider the case of determinable properties (e.g., being in pain) and determinate properties (e.g., being in a particular brain state). This is another case that shows the difference between a grounding chain and a causal chain. According to Shoemaker (2007) and Wilson (2011), the causal powers of each determinable are a non-empty proper subset of the causal powers of their determinates. This can be understood as the causal powers of the determinables being metaphysically explained by the causal powers of their determinates. If there is no fundamental level, the explanation of the same causal powers is always moved somewhere else.

For example, consider a property D that has causal powers P_1-P_5. Property D is grounded in property E that has causal powers P_1-P_{10}. Property E is grounded in property F that has causal powers P_1-P_{15}, and so on ad

infinitum. D's source of causal capacity always moves somewhere else: the metaphysical explanation of the causal powers of D always moves to another property that possesses, among others, these causal powers. The same causal powers are found in other properties ad infinitum. There is transference of the same causal powers ad infinitum.

Remember what Schaffer has considered as a vicious regress. For Schaffer (2016, 95), "a regress counts as vicious if and only if there is an endless chain of dependency with transference of the relevant status". We might be asked, 'Why does a grounded object A have this specific causal capacity?', and we would mention B, its cause, as the source. Then, if we were asked, 'But why does B have this specific causal capacity?', the causal capacity in question differs from A's causal capacity. Therefore, we are no longer talking about the transference of the same status. Therefore, an endless chain of causal dependencies is not vicious.

Someone may respond to me by saying that I was talking about the specific determinate causal powers (or the determinable property of having these specific causal powers) instead of the determinable property of having the capacity for causal activity (i.e., the determinable property of having causal powers), and the latter was the property that Trogdon was talking about. An object has this determinable property, iff it has determinate properties with specific, determinate causal powers. This determinable property reveals a way that there can be a transference of the same status from the cause to the effect. There can be an infinite chain of causal dependence in which there is always transference of the capacity for causal activity. A vicious infinite regress reappears.

However, I think we do not need to admit the existence of the determinable property of having the capacity for causal activity. It is true to say that an object has the capacity for causal activity iff it possesses properties with specific causal powers. An additional determinable property is not needed to explain why it is true or to make sense of our claims. There is no motivation for postulating the existence of an additional property. It is not the case that there are determinate properties with specific causal powers and a determinable property with the capacity for causal activity. There are only the former properties.

Even if we think that having causal capacity is a determinable property over and above the properties with specific causal powers and as a result, there is a transference of the same status from the cause to the effect, then it may be the case that the intuition behind the foundationalist argument can be used to argue for the existence of either a fundamental level or a Prime Mover. It may be argued that if A exists in virtue of B that exists in virtue of C and so on ad infinitum, then it is a wonder why A exists: the status of A is always transferred somewhere else. But if A is grounded in a fundamental entity, then it can be explained why A exists by avoiding a vicious infinite regress. Still, I wonder why we should not say instead that infinitism is true and a Prime Mover is the source of RCC of a grounded object. A vicious infinite regress is avoided this way too. It seems that the foundationalists' intuitions can be used to argue for this claim instead.

There is still a plausible objection to the foundationalist argument about infinite regress, even if my claims about transference of a different status in the case of causation are wrong. Vicious infinite regresses can be avoided by postulating grounded objects, a Prime Mover, or a first physical cause, and more needs to be said about which metaphysical view we should prefer. Considerations about infinite regress does not favour one of these metaphysical views.

5.2. Non-Generative, Non-Power Conferring Accounts of Physical Causation

So far, I assumed that a generative, power-conferring account of physical causation is true. However, metaphysical views about causation and existence, which Schaffer endorsed, may be used at this point to argue against my objection. Nonetheless, I will argue that these views fail to show that my objection does not work.

Schaffer (2016, 95-96) has allowed for limitlessly backwards causal and temporal sequences. Concerning causation, he has claimed that there is no transference of reality. The effect has intrinsic reality unto itself and is ontologically subsistent in its own right. No first cause is needed because of that.

> Within each distinct portion of reality, one must find an internal source of its reality (this is the required well-foundedness of grounding). But across distinct portions of reality, one is dealing

> with metaphysically independent tiles of the cosmic mosaic, and each tile is there from the start without needing a source (this is the permitted non-well-foundedness of causation) (Schaffer 2016, 96).

The quoted passage above claims that while limitlessly backwards causal sequences do not lead to vicious infinite regresses, infinite chains of grounding do so. It is not mentioned, though, why we should believe that this is the case. It is not explained why this contrast holds. Schaffer says that grounding must be well-founded to avoid vicious infinite regresses. But this does not seem to be the case.

It is unclear why all the objects of an infinite priority chain could not always exist without the need for a source. It is not obviously true that there must be a fundamental entity that generates the grounded entities. There is an alternative plausible story that I suggest in this section. Schaffer's story may seem more intuitive, but this does not make the alternative false (and this is what Schaffer needs for his argument to be sound). Schaffer did not give any argument against this alternative story.

Another way to express what has been said so far is that Schaffer has a specific foundational intuition in mind. At any moment, there is a fundamental level and entities that are generated by it. Without a fundamental level, how could all these entities be generated? The generator would move somewhere else ad infinitum. My answer: they could be generated by their (first) cause, or they could have always existed.[28] I do not see why Schaffer's generative model is the only possible solution.

Grounding can still be generative, in my view. It can still play the same role but in an overdetermining way. It can be the case that all entities of a priority chain always existed, and at any time, grounding overdetermines the causal capacity of entities. Alternatively, it can be the case that each

[28] It may be argued that if everything always existed, then foundationalism is true: everything is fundamental in a broader sense (X is fundamental iff X is ungrounded or always existed). As mentioned, I restrict 'foundationalism' to the view that all grounded entities are fully grounded in ungrounded entities. Even if other metaphysical views can be called 'foundationalist' in a broader sense, it does not influence my argument that vicious infinite regresses are not avoided only through ungrounded objects.

grounded object is real and has causal capacity because of its (first) cause and its ground. So, it does not need to have RCC in virtue of an ungrounded object. I will briefly discuss in subsection 5.4 whether this kind of overdetermination is problematic.

I think both caused and grounded entities need to have a source of RCC that does not receive its RCC from something else, or neither of them does. If both do, we may have two equally plausible solutions: a Prime Mover or a fundamental level. A Prime Mover may be the source of RCC of all objects. Otherwise, a fundamental level is this source: at any moment, certain fundamental entities are the source. They both can be the source, and foundationalists have to say more about why one option is better than the other.

A disanalogy between the grounding case and the causing case may be that while in the infinitist's account, a cause brings about the existence of grounded entities in a robust sense, in Schaffer's account, the cause does not bring about the existence of the effect in a similar robust sense (the effect was there all along). That is, causation is not generative (as I use the term). Infinitists may need a more robust account of causation than what Schaffer endorses.

Following Pearl (2000) and Spirtes et al. (2000), Schaffer (2016) has formalised causation through structural equation models that mention correlations to pick out the actual causal relations. Under certain conditions, one can infer causation from correlation.

> Structural equation models come with precise—and indeed freely downloadable—discovery algorithms that allow one, given certain plausible assumptions, to estimate causal structure from sufficiently rich correlational structure over three or more variables (Schaffer 2016, 60).

If you want to find out whether a specific type of causal relation holds, you can "input your data into TETRAD (or some other causal discovery algorithm), and receive a precise and empirically reliable estimate of direction and strength of causal influence" (Schaffer 2016, 60). If you want to find out whether a particular token causal relation occurs, you use the type-level picture you get from using a causal discovery algorithm, assign values to the relevant variables that refer to potential causes, and then look at what would happen to the variable that refers to an assumed effect if you re-

assign a particular variable while keeping the other variables fixed (distinct variables represent distinct features of the world). In other words, whether a token causal relation holds can be discovered through a test in terms of counterfactual covariation: wiggle the cause, and the effect wiggles.

A foundationalist may argue that for the cause to be the source of RCC of the effect, infinitists need a more robust account of causation than the structural equation models account[29] (e.g., a productive account of causation that identifies causation with the transference of energy from the cause to the effect[30]); they need a kind of causation that transfers RCC from the cause to the effect. This is the only way the cause can make the effect have RCC. But generative accounts of causation are false, and so, my objection is false too.

Nevertheless, even if we endorse the structural equation models account of physical causation, I still do not see why it is impossible that God produced everything from the beginning, and this is the source of RCC of everything. God causes events in a non-physical way. This alternative is still viable. Even if there are good reasons to conceive physical causation as non-generative and non-power conferring, they do not exclude the possibility of non-physical causation that is generative and power conferring. More generally, the proponent of this response would have to argue that the structural equation models account is an account of all causation, i.e., of the one and only causal relation. However, it is unclear how to argue for this.

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[29] Objection by an anonymous reviewer: structural equation models are primarily *models*. As models, they are neutral on the underlying metaphysics of what is being modelled. Hence, they should be compatible with all kinds of views about causation, including generative ones.

Response: Here, I consider the possibility that a structural equation models account is presented as a deflationary account of causation that assumes there is nothing more to causation. If there is something more revealed by a power-conferring account of causation, this something more can be used to argue for the possibility of a cause as a source of RCC (as I have already done in the previous subsection).

[30] Schaffer (2016) has claimed that both causation and grounding are productive and generative, but he has meant this in a different sense from what the productive account of causation does. As we have seen above, causes and effects have always existed for Schaffer. A cause does not bring about the existence of an effect; there is no transference of reality from the cause to the effect.

Alternatively, if we have good reasons to think that the structural equation models account is an account of all causation, it could be claimed that all entities always existed, including the grounded entities (i.e., the universe is eternal). All times are equally real, and the universe has no beginning. There is no moment in which the universe was created either by the Big Bang or God. In this case, grounded entities do not have a source of RCC, and there is no reason to think they should. These entities always existed. There was no time that they were brought into existence, and causal capacity was transferred from something else to them. So, even in this case, worries about vicious infinite regresses do not motivate the truth of foundationalism.

Someone could object that a confusion between existential and temporal priority seems to be made. I adhere to the idea that if objects have always existed, they would not need a source for their reality or causal capacity. However, grounding theories assume that the groundee and the grounded can temporally coexist while the latter ontologically depends on the former.

I try to motivate a different metaphysical picture here. A grounded object can still do its metaphysical job. It can still transfer RCC to another grounded object even though this object already has that RCC. A source of RCC is not needed because there is no time that a grounded object did not exist, and somehow, it was brought into existence.

Otherwise, someone could claim they are unsure they see how eternal existence would remove the need for explanation. The grounding regress is synchronic-- it is (allegedly) mysterious how such an infinite priority chain could exist at any time, let alone every time.

However, I think that there is an available explanation. The eternal existence is the explanation. Grounded objects have the RCC they have because they always had it.

5.3. Causal Explanations, Metaphysical Explanations, and Sources of RCC

The foundationalist argument I want to undermine can be formulated as (a) or (b) below:

a) If there were infinite (backward) dependency chains, there would not be an explanation of why a given object exists and/or has

causal powers. But there must be such an explanation. Therefore, there are no infinite (backward) dependency chains.

b) If there were infinite (backward) dependency chains, there would not be a source of reality or causal powers for a given nonfundamental object. But there must be such a source. Therefore, there are no infinite (backward) dependency chains.

I deny the first premise of the argument (that is, the initial conditional statement in (a) and (b) respectively) by claiming that the explanation/source of reality and causal powers can be provided by the cause (proximal or distal) of the nonfundamental object.

A foundationalist may worry about this argument: it seems that my point against the first premise of the argument works just in case one understands 'explanation' as 'whatever explanation' and 'source of reality and causal powers' as 'whatever explains, in some sense of 'explaining', why a given object exists and has its causal powers'. If these liberal understandings of such terms are adopted, my argument against the first premise works: in fact, what causally explains why a given object exists and has its causal powers explains (in the causal sense of 'explaining') why the object exists and has its causal powers. But it may seem to a foundationalist that this is not the sense of 'explaining' foundationalists such as Schaffer, Cameron, and Trogdon have in mind. They are, in fact, thinking of metaphysical explanation or constitutive explanation: an explanation whose features are different from those of causal explanations (for instance, it is synchronic, it is such that the explanans necessitates the explanandum, it is true in virtue of the nature(s) of the things involved). Accordingly, what they have in mind when they speak about a 'source of reality and causal powers' is something that explains, in this metaphysical/constitutive/synchronic sense of 'explanation', why a given object exists and has its causal powers. But if one understands the first premise of the argument in these more exigent senses of 'explanation' and 'source of reality and causal powers', my argument does not work anymore: the vicious regress to which foundationalists are pointing is, in fact, precisely one concerning metaphysical/constitutive explanation, and it may seem to an objector that this regress cannot be stopped by pointing to another kind of explanation. In other words, the foundationalist may stress that by pointing to an external cause, one

explains how the object, with its causal powers, came into existence. However, this is not the request of explanation that the foundationalist wants to answer. What he wants to explain is, in fact, why the object exists and is what it is at any given time once it came into existence (synchronic/constitutive explanation).

I think that an infinitist can respond satisfactorily to this objection. Suppose that X, a grounded object, grounds Y, another grounded object. In this case, Y is metaphysically explained by X. This metaphysical explanation is satisfactory even though X is a grounded object because X already has RCC from its cause.

If we only focus on metaphysical explanations, there is a problem. The original problem of metaphysical infinitism was that infinitists were trying to metaphysically explain Y by mentioning only its ground. If we just mention X, it is a wonder why X can metaphysically explain Y satisfactorily. X has its RCC in virtue of another grounded object, and so on ad infinitum. The explanation never stops. But if we give a causal explanation of X, then it can be shown why a grounded object is sufficient for metaphysically explaining what it grounds.

The initial worry of the foundationalist was that X cannot metaphysically explain Y because X gets its RCC from something else that gets it from something else, and so on ad infinitum. But if X gets its RCC from its cause and the transference of RCC ends there (or the transference ends in a Prime Mover or a first physical cause), there is not any problem with a grounded object metaphysically explaining another grounded object.

The foundationalist worry may be that once X gets its RCC from its cause, something else must keep giving it its RCC or explain why X keeps having RCC. I do not see why this must be the case, and this worry brings us closer to the objection mentioned by Bliss (2013), which is that foundationalist arguments concerning vicious infinite regresses are circular. The search for a specific kind of metaphysical explanation is motivated by specific foundationalist intuitions, but we have these intuitions only if we are already persuaded by foundationalism.

The assumption that once X gets its RCC from its cause, it keeps having it seems very plausible. A reason must be given why we should not think this way.

I have decided to talk about arguments (a) and (b) because I think these are the best versions of foundationalist arguments concerning vicious infinite regresses because they avoid circularity. Still, these arguments also fail.

5.4. Objections and Replies

In what follows, I will mention some possible objections and my replies to them.

Objection: Earlier, when I imagined FPCC1, I imagined that X (e.g., an ungrounded particle) is not a part of an infinite chain. I do not consider a world in which some objects are parts of infinite chains while other objects are not problematic. If for any reason[31], someone does, the following case could be considered:

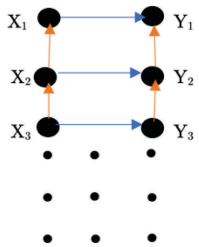

Figure 5: Fully Pedestalled Causal Chain 2 (FPCC2)

[31] Schaffer (2010) has claimed that compositional facts are not contingent. If priority monism or pluralism is true, it is true with metaphysical necessity. So, Schaffer believes that *"either it is metaphysically necessary for the cosmos to be a fundamental whole, or it is metaphysically necessary for the cosmos (if it has proper parts) to be derivative"* (Schaffer 2010, 56). A metaphysical infinitist could agree that compositional facts are not contingent and, contra Schaffer, argue that metaphysical infinitism is true with metaphysical necessity. So, it is metaphysically necessary for the cosmos to include only infinite chains.

Otherwise, she may think that compositional facts are contingent and still believe that there are only infinite chains in the actual world because of methodological reasons (a world in which there are only infinite chains is qualitatively simpler than a world in which there are both infinite and finite chains).

Reply: There are infinite Xs that form an infinite priority chain, and Ys do so too (e.g., X1 is the statue's creator, and Y_1 is the statue; both are infinitely divisible). As with the FPCC1, there is a source of RCC for every Y, even though the source is not inside the infinite chain of Ys. A difference is that not one X is the cause of all the Ys. Still, the metaphysical explanation for each Y ends somewhere (in its direct physical cause). If we worry about a vicious infinite regress of causes or seek an ultimate explanation, the source of each Y's RCC can be the universe's first physical cause.

Objection: The proposed view faces the problem of overdetermination. Xs determine Ys, and each Y, except Y_1, overdetermines another Y.

Reply: This is a big issue to discuss here, but if there is no problem with overdetermination (see Sider (2003) for reasons to believe so), these infinite chains seem unproblematic.

Trogdon (2018) has mentioned the denial of overdetermination as a part of his foundationalist argument. Schaffer has not mentioned having a similar problem with overdetermination. This shows that whether my reply is successful depends partially on whether the denial of overdetermination is reasonable and a part of the foundationalist argument. If it does, I may need to say more to persuade the foundationalist that overdetermination is unproblematic after all.

Objection: A revised foundationalist argument may still be possible. It can be stated by arguing that certain metaphysical positions I used here are false. The foundationalist has to deny the truth of occasionalism, the existence of a Prime Mover, that our universe is eternal, and that there was a first physical cause. If these entities exist or these theories are true, they can provide a non-foundationalist source of RCC. So, a foundationalist should show that these entities do not exist and that these theories are false to motivate their view.

Reply: In this way of thinking, this paper contributed to making explicit how a foundationalist should argue for their position. So, there is still a philosophical value to it. It revealed that the dialectic should change. It is not the case that foundationalism is the only way to avoid a vicious infinite regress. Foundationalism is the only way to avoid a vicious infinite regress, given that certain metaphysical views are false.

However, I am sceptical of the plausibility of this foundationalist reply. I am unaware of any argument for the definite falsity of these views. Usually, they are rejected because of methodological principles, bringing us closer to Cameron's (2008b) argument. It seems that what does the philosophical work in order to argue for metaphysical foundationalism is methodological principles (simplicity and theoretical utility: see Cameron, 2008b). There is no need to mention considerations about infinite vicious regresses. These considerations do not work. Whether Cameron's argument is sound is controversial and outside of the scope of this paper. I just mention it here to show how the dialectic may need to change and how foundationalists may have to argue for their view.

Objection: It is hard to see how God could produce a grounded entity except by producing its grounds. For example, no one, not even God, can create a house directly. One can create a house only by creating its parts in certain relations to each other. If this is right, then God can create any given member of an infinite priority chain only by creating its grounding member(s), and God creates them only by creating its grounding member(s), and so on. This looks similar to the original regress and is also vicious. The 'by' locution keeps passing God's task down to the next level so that if this were to continue infinitely, he would never have anything to create.

Reply: According to metaphysical foundationalism, the whole universe or some particles are created by God (literally or figuratively), and the rest follows. If that is the case, it is unclear to me why God could not create both directly. It is unclear why creating the one directly makes it impossible to also create the other directly.

I claim that God can, at the same time, directly create both the house and the parts, but someone may have doubts that this claim is coherent. Namely, it may be unclear to someone that God could directly create something that is an ontological free lunch that comes ontologically 'for free' once its ground is in place. It seems that on such a conception, not even God can create a house (assuming that houses are derivative) unless God first creates its parts.[32]

I do not see any independent reason why we should find impossible the creation of both the house and its parts by God. God could create an object

[32] Thanks to an anonymous reviewer for raising this objection.

that is grounded in another object, and it does not follow that the created object is not an ontological free lunch. Believing differently just reveals a different metaphysical picture that I argued against in this paper. I gave many examples to motivate this picture. More needs to be said about why this metaphysical picture is impossible.

Despite being created by God, the house is grounded in its parts. That is why it is an ontological free lunch. Its continuing existence is grounded in its parts. Still, its source is its cause (God).

This takes us back to footnote 25. It may be that God is the cause of every individual item in an infinite chain of grounding (one-to-infinity causation), or it may be that God is instead the cause of that chain as a whole (one-to-one causation). I can use both accounts to argue for God as the source of RCC of a grounded object belonging to that infinite chain. I do not see any reason to prefer one of these two accounts.

If what I have said so far is correct, our intuitions about infinite regresses cannot be used to argue for foundationalism because the source of RCC of a grounded object can be its (first) physical cause or a God. Fully pedestalled causal chains are possible and counterexamples to the claim that the source of RCC must be inside a priority chain. Priority chains can terminate, even if infinitism is true. They terminate in their direct or indirect cause. What really encourages our foundational intuitions about infinite regresses is the search for a source of RCC, and this source can be found even if infinitism is true. Therefore, a foundationalist must abandon their view if they do not have any other reason to endorse this theory.

6. Conclusion

Schaffer and Trogdon have argued that metaphysical foundationalism is the only way to avoid vicious infinite regresses that emerge as a consequence of infinite grounding chains, and therefore, we have a good reason to endorse it. However, I argued that alternative sources of reality or causal capacity that avoid such vicious infinite regresses are possible, even if metaphysical infinitism is true. These can be the direct physical cause of a grounded entity, the first physical cause, or God. Alternatively, it can be the case that there is no need for a source of RCC because our universe is eternal.

Therefore, foundationalism cannot be motivated by the argument concerning vicious infinite regresses.

Acknowledgements

I would like to thank Aaron Cotnoir, Derek Ball, Franz Berto, Tuomas Tahko, and an anonymous referee for Organon F for helpful comments on earlier versions of this paper. Thanks also to seminar and conference audiences at the University of Amsterdam, University of Salzburg, and University of St Andrews for helpful discussions and comments on previous versions of this paper.

References

Audi, Paul. 2012. "Grounding: Toward a Theory of the in-Virtue-of Relation." *The Journal of Philosophy*, 109(12): 685–711. https://doi.org/10.5840/jphil20121091232

Barnes, Elizabeth. 2018. "Symmetric Dependence." In *Reality and its Structure: Essays in Fundamentality*, edited by Ricki Bliss and Graham Priest, 50–69. Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780198755630.001.0001

Bennett, Karen. 2011a. "By Our Bootstraps." *Philosophical Perspectives*, 25(1): 27–41. https://doi.org/10.1111/j.1520-8583.2011.00207.x

Bennett, Karen. 2011b. "Construction Area (No Hard Hat Required)." *Philosophical Studies*, 154 (1): 79–104. https://doi.org/10.1007/s11098-011-9703-8

Bennett, Karen. 2017. *Making Things Up*. Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780199682683.001.0001

Bird, Alexander. 2007. *Nature's Metaphysics: Laws and Properties*. Oxford: Clarendon Press. https://doi.org/10.1093/acprof:oso/9780199227013.001.0001

Bliss, Ricki. 2013. "Viciousness and the Structure of Reality." *Philosophical Studies*, 166 (2): 399–418. https://doi.org/10.1007/s11098-012-0043-0

Bliss, Ricki. 2014. "Viciousness and Circles of Ground." *Metaphilosophy*, 45(2): 245–56. https://doi.org/10.1111/meta.12072

Bohn, Einar Dunguer. 2018. Indefinitely Descending Ground. In *Reality and Its Structure: Essays in Fundamentality*, edited by Ricki Bliss and Graham Priest, 167–81. Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780198755630.001.0001

Cameron, Ross P. 2008a. "Truthmakers and Ontological Commitment: Or How to Deal with Complex Objects and Mathematical Ontology without Getting into

Trouble." *Philosophical Studies*, 140(1): 1–18. https://doi.org/10.1007/s11098-008-9223-3

Cameron, Ross P. 2008b. "Turtles All the Way Down: Regress, Priority and Fundamentality." *The Philosophical Quarterly*, 58(230): 1–14. https://doi.org/10.1111/j.1467-9213.2007.509.x

Cameron, Ross P. 2010. "From Humean Truthmaker Theory to Priority Monism." *Noûs*, 44(1): 178–98. https://doi.org/10.1111/j.1468-0068.2009.00736.x

Castaneda, Hector Neri. 1984. "Causes, Causity, and Energy." *Midwest Studies in Philosophy*, 9(1): 17–27. https://doi.org/10.1111/j.1475-4975.1984.tb00050.x

Correia, Fabrice. 2010. "Grounding and Truth-Functions." *Logique et Analyse*, 53(211): 251–79.

Dasgupta, Shamik. 2014. "On the Plurality of Grounds." *Philosopher's Imprint*, 14(20).

Dixon, T. Scott. 2016. "What is the Well-Foundedness of Grounding?." *Mind*, 125(498): 439–68. https://doi.org/10.1093/mind/fzv112

Fair, David. 1979. "Causation and the Flow of Energy." *Erkenntnis*, 14(3): 219–50. https://doi.org/10.1007/BF00174894

Fine, Kit. 2001. "The Question of Realism." *Philosophers' Imprint*, 1(1): 1–30.

Fine, Kit. 2012. "Guide to Ground." In *Metaphysical Grounding: Understanding the Structure of Reality*, edited by Fabrice Correia and Benjamin Schnieder, 37–80. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139149136

Heil, John. 2003. *From an Ontological Point of View*. Oxford: Clarendon Press. https://doi.org/10.1093/0199259747.001.0001

Heil, John. 2012. *The Universe as We Find It*. Oxford: Oxford University Press. https://doi.org/10.1093/acprof%3Aoso/9780199596201.001.0001

Jenkins, Carrie S. 2011. "Is Metaphysical Dependence Irreflexive?" *The Monist*, 94(2): 267–76. https://doi.org/10.5840/monist201194213

Kim, Jaegwon. 1984. "Epiphenomenal and Supervenient Causation." *Midwest Studies in Philosophy*, 9: 257–70. https://doi.org/10.1111/j.1475-4975.1984.tb00063.x

Kim, Jaegwon. 2005. *Physicalism or Something Near Enough*. Princeton, New Jersey: Princeton University Press. https://doi.org/10.1515/9781400840847

Morganti, Matteo. 2009. "Ontological Priority, Fundamentality and Monism." *Dialectica*, 63(3): 271–88. https://doi.org/10.1111/j.1746-8361.2009.01197.x

Morganti, Matteo. 2014. "Metaphysical Infinitism and the Regress of Being." *Metaphilosophy*, 45(2): 232–44. https://doi.org/10.1111/meta.12080

Morganti, Matteo. 2015. "Dependence, Justification and Explanation: Must Reality be Well-Founded?" *Erkenntnis*, 80(3): 555-72. https://doi.org/10.1007/s10670-014-9655-4

Pearl, Judea. 2000. *Causality: Models, Reasoning, and Inference*. Cambridge: Cambridge University Press.

Rabin, Gabriel Oak, and Rabern, Brian. 2016. "Well Founding Grounding Grounding." *Journal of Philosophical Logic*, 45(4): 349–79. https://doi.org/10.1007/s10992-015-9376-4

Rosen, Gideon. 2010. "Metaphysical Dependence: Grounding and Reduction." In *Modality: Metaphysics, Logic, and Epistemology*, edited by Bob Hale and Aviv Hoffmann, 109–36. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199565818.003.0007

Schaffer, Jonathan. 2009. "On What Grounds What." In *Metametaphysics: New Essays on the Foundations of Ontology*, edited by David Chalmers, David Manley, and Ryan Wasserman, 347–83. Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780199546046.003.0012

Schaffer, Jonathan. 2010. "Monism: The Priority of the Whole." *Philosophical Review*, 119(1): 31–76. https://doi.org/10.1215/00318108-2009-025

Schaffer, Jonathan. 2012. Grounding, Transitivity and Contrastivity. In *Metaphysical Grounding: Understanding the Structure of Reality*, edited by Fabrice Correia and Benjamin Schnieder, 122–39. Cambridge: Cambridge University Press. http://doi.org/10.1017/CBO9781139149136.005

Schaffer, Jonathan. 2016. "Grounding in the Image of Causation." *Philosophical Studies*, 173(1): 49–100. https://doi.org/10.1007/s11098-014-0438-1

Shoemaker, Sydney. 1980. "Causality and Properties." In *Time and Cause*, edited by Peter Van Inwagen, 109–35. Dordrecht: Reidel Publishing Co. https://doi.org/10.1007/978-94-017-3528-5_7

Shoemaker, Sydney. 1998. "Causal and Metaphysical Necessity." *Pacific Philosophical Quarterly*, 79: 59–77. https://doi.org/10.1111/1468-0114.00050

Shoemaker, Sydney. 2007. *Physical Realization*. Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199214396.001.0001

Sider, Theodore. 2003. "What's so Bad about Overdetermination?" *Philosophy and Phenomenological Research*, 67(3): 719–26. https://doi.org/10.1111/j.1933-1592.2003.tb00321.x

Spirtes, Peter, and Scheines, Richard. 2004. "Causal Inference of Ambiguous Manipulations." *Philosophy of Science*, 71: 833–845. https://doi.org/10.1086/425058

Tahko, T. E. (Fall 2018 Edition). Fundamentality. In *The Stanford Encyclopedia of Philosophy*, edited by E. N. Zalta. Retrieved from https://plato.stanford.edu/archives/fall2018/entries/fundamentality/

Trogdon, Kelly. 2017. "Priority Monism." *Philosophy Compass*, 12(11): e12458. https://doi.org/10.1111/phc3.12458

Trogdon, Kelly. 2018. "Inheritance Arguments for Fundamentality. In *Reality and its Structure: Essays in Fundamentality*, edited by Ricki Bliss and Graham

Priest, 182–98. Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780198755630.003.0010

Wilson, Jessica. 2011. "Non-Reductive Realization and the Powers-Based Subset Strategy." *The Monist*, 94(1): 121–54. https://doi.org/10.5840/monist20119417