

## Dependence, Justification and Explanation: Must Reality be Well-Founded?

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**Abstract** This paper is about metaphysical ‘infinetism’, the view that there are, or could be, infinite chains of ontological dependence. Its main aim is to show that, contrary to widespread opinion, metaphysical infinetism is a coherent position. On the basis of this, it is then additionally argued that metaphysical infinetism need not fare worse than the more canonical ‘foundationalist’ alternatives when it comes to formulating metaphysical explanations. In the course of the discussion, a rather unexplored parallel with the debate concerning infinetism about justification is suggested.

### 1 Introduction

Philosophical issues surrounding ontological dependence and fundamentality have been intensely discussed as of late. Under the assumption that the structure of what ontologically depends on what and the mereological structure of what is a part of what coincide, one could present a shared pre-theoretical intuition about material reality by stating that ‘everything is ultimately constituted by some combinations of basic, small ‘building blocks’—the latter being identified with a finite number of fundamental particles (or field-values, or space–time points, or what have you). Contra this entrenched ‘Democritean’ presupposition, however, it has been argued that reality need not be composed of a finite set of simple atoms, and indeed the concept of a fundamental level inhabited by the smallest things can legitimately be questioned (see, e.g., Schaffer 2003). Perhaps, as ‘monists’ would have it, ontological dependence relations go from the larger to the smaller, so that the whole is prior to its parts? (see,

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e.g., Schaffer 2010, where ideas already present in Parmenides, Spinoza and Hegel, among others, are forcefully revived<sup>1</sup>).

But there is more. Noticing that the world might be gunky (i.e., such that all of its proper parts have further proper parts, or at least there is something such that all of its proper parts have proper parts) but also junky (i.e., such that everything is a proper part of something), the notion of fundamentality itself has been put into doubt. In particular, the possibility of gunk and junk seems to represent a problem for ‘proponents of priority’ (Tallant 2013), for it threatens both Democritean pluralism and monism, and no other account of fundamentality seems available. However, this is only so if one assumes that, whatever the structure of reality is, it is necessarily the structure of reality—for then the mere possibility of endless series of parthood/dependence relations would suffice for undermining the fundamentalist hypothesis. Contrary to this assumption, a monist or an atomist could grant the existence of junky or gunky possible worlds, respectively, and yet claim that they are right about the structure of the actual world. This would mean to claim that the actual structure of reality is contingently what it is—in this case, a chain of ontological dependence relations that terminates either at the uppermost end or at the bottom end.

There is another important point to consider, however, which leads us to the theme of this paper. It is that worlds with infinite series of proper parts or with no all-comprising object are only a problem for—let’s use Tallant’s label again—proponents of priority if they assume that priority/dependence chains must be well-founded, i.e., have an end constituted by one or more entities that do not depend on any other entity. Well-foundedness, however, can be given up: pluralism and atomism are not the only ways in which reality could possess a metaphysical structure based on priority and dependence relations. Perhaps the coherentist view that ontological dependence constitutes a ‘web’ of mutually dependent entities is correct. Or maybe it is the infinitist view, according to which dependence relations have a precise direction but not an end, that provides the right depiction of reality.<sup>2</sup> In both cases, the key foundationalist presupposition is abandoned.

How relevant are these non-foundationalist metaphysical views? In the extant literature, they haven’t received much attention. It seems to be a widespread belief, and one provided with such an intuitive force not to require explicit elaboration, that coherentism doesn’t work because circular dependence and priority cannot really ground anything. Analogously, infinitism appears to be a non-starter because if chains of ontological dependence are infinite nothing really is, as ‘being is forever deferred and never achieved’. However, it is necessary to dig deeper into these issues if the real import of this sort of claims is to be established.

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<sup>1</sup> Schaffer differentiates this priority monism from the existence monism, or blobjectivism, recently endorsed, for instance, by Horgan and Potrc<sup>7</sup> (2000), according to which only the One really exists—the parts being only a useful fiction.

<sup>2</sup> Strictly speaking, while finiteness entails well-foundedness and, consequently, the negation of well-foundedness entails infinity, infinite chains might still have a ground (the latter would just be infinitely many steps away from the starting point). This marks a difference with respect to the set-theoretic meaning of ‘well-founded’, which basically corresponds to the metaphysical ‘finitely grounded’. For simplicity, however, in what follows I will take the metaphysical infinitist thesis to essentially involve the denial of well-foundedness in the sense that there is a fundamental ground of being somewhere.

Consider the classical debate in epistemology, concerning justification. There, a problem arises when we think about what justifies our beliefs. It is best expressed in the form of Agrippa's famous trilemma: if everything one believes requires justification, either (1) we posit basic, unjustified beliefs, or (2) we opt for a web of coherent beliefs, or (3) we admit that justification leads to an infinite regress. The parallel with the three options available in the case of metaphysical priority and dependence is evident. Indeed, it is not merely superficial. Imagine, for instance, that we seek a justification for a belief B, where B is about a mereologically complex entity E. It is likely that the belief(s) that we will use to justify B concern(s) the simpler entities, allegedly ontologically prior to E, that constitute E. It thus looks as though, at least in some cases, the questions raised in the epistemological and in the metaphysical scenarios overlap quite significantly. Gillet (2003) goes as far as to argue that the problem with an infinite chain of justificatory reasons has essentially to do with metaphysical structure and nothing else, since 'being justified' is just a property like any other. According to Gillet, that is, the epistemological problem of justification really concerns one specific form of ontological dependence, and is consequently reducible to the problem concerning the metaphysical structure of reality. Of course, if Gillet were right there would be one more reason for not only demanding that the non-canonical, non-foundationalist alternatives be explored in metaphysics at least as much as they have been in epistemology; but also for thinking that the analysis of the metaphysical issue should be given priority (!) over that of its epistemological counterpart. Whatever one thinks of this, however, for present purposes it is sufficient to assume something less: namely, that the epistemology-metaphysics analogy holds at least to the extent that developing it may allow one to shed some further light on the issues that surround fundamentality, priority and dependence.

Based on this, then, let us look again at the three abovementioned responses to Agrippa's sceptical challenge. Acceptance of option (1) above, the obvious epistemological counterpart of metaphysical foundationalism, is taken by some to actually fail as a matter of principle to represent a solution to the problem of justification. For, it postulates as a fundamental basis something that lacks justification by definition, while justification is all we were looking for in the first place. As a consequence, more or less recently many epistemologists came to think that options (2) and (3) are definitely worth exploring, if not clearly preferable. And indeed, a good amount of ink has been spent on these less popular views of justification. What, then, about the issue concerning metaphysical structure? Couldn't one think that foundationalists simply assume that a level of basic constituents exists, in a way which is in any case explanatorily unsatisfactory? If so, wouldn't it be sensible to think that non-foundationalist alternatives should be carefully (re-)assessed, and perhaps favoured?

What I plan to do in this paper is to suggest affirmative answers to these questions and, consequently, start filling what appears to be an important gap in the metaphysics literature. In order to do so, I will exploit the proposed analogy between the structure of justification and metaphysical structure with a view to exploring the prospects for non-foundationalism about the latter. In particular, I will explore the prospects for a plausible form of metaphysical infinitism—coherentism

will be set aside for the time being. My primary aim will be to show that the basic objection to metaphysical infinitism which I mentioned in passing above, according to which being is ‘never achieved’ in an infinitist setting (I will call it the ‘regress of being objection’—RBO, for short—from here onwards), rests on a misrepresentation of the infinitist position; or, at any rate, can be effectively responded to once infinitism is aptly formulated. Using the right conceptual tools, I will argue, it can be shown that nothing like a vicious regress of being need to arise in infinitist contexts, and yet infinitists can aim to provide more than merely partial analyses of the structure of reality. In particular, recent work on the ‘emergence’ of justification along infinite chains of reasons will turn out to be very relevant for the metaphysical infinitist’s purposes.

Cautionary note: as I said, I will not discuss metaphysical coherentism. While the position is surely worth exploring in more detail, and might turn out to have interesting applications, I do think that coherentism is, in metaphysics as much as in epistemology, the least appealing option, the charge of circularity being quite powerful against it. For present purposes, however, I will just assume that this is so, without presenting positive arguments against the position—if only because a discussion of both coherentism and infinitism would exceed the limits of a self-contained paper.

The structure of what follows is this: in Sect. 2, I will explain what RBO amounts to in a bit more detail. In Sect. 3, I will consider and compare two answers to RBO and defend the view that, at infinitist worlds, being gradually emerges from the relevant chains of priority and dependence rather than getting transmitted from one link of the chain to the next (the notions of ‘emergence’ and ‘transmission’ will be made more precise there). In Sects. 4 and 5 I will look at, and reject, some objections that might be moved to metaphysical infinitism on grounds different from those underlying RBO. A concluding Sect. 6 will follow.

## 2 The Regress of Being Objection

The basic idea behind RBO is captured well, and usefully presented in mereological terms, by Leibniz (who, incidentally, was by no means an enemy of infinitism) when he says that

“Where there are only beings by aggregation, objects, there are no real beings. For [...] every being derives its reality only from the reality of those beings of which it is composed, so that it will not have any reality at all if each being of which it is composed is itself [...] a being for which we must still seek further grounds for its reality, grounds which can never be found in this way, if we must always continue to seek for them” (Leibniz 1989; 85).

More recently, discussing the options that are available to the metaphysician who examines the structure of being, Schaffer explains that:

“Just as the epistemic foundationalist thinks all warrant must originate in basic warrant and rejects limitless chains of warrant and circular warrant, so the

metaphysical foundationalist thinks all being must originate in basic being and rejects limitless chains of dependence (metaphysical infinitism) and circular dependence (metaphysical coherentism). There must be a ground of being. If one thing exists only in virtue of another, then there must be something from which the reality of the derivative entities ultimately derives'' (2010; 37, notice the parallel between metaphysics and epistemology).

Overtly endorsing metaphysical foundationalism in the rest of the paper, Schaffer goes on to contend, like Leibniz in the previous quotation, that if chains of dependence were infinite ''[b]eing would be infinitely deferred, never achieved'' (2010; 62). Why? Because, the idea is, without ultimate constituents of reality not depending on anything else the existence of dependent entities (i.e., in the present case, mereological composites) could never be established.

Now, of course here I agree with Schaffer that the proposed analogy between epistemology and metaphysics is cogent. I also think, however, that the basic idea behind foundationalism—i.e., that there must be a fundamental layer of one or more ungrounded entities or non-justified reasons—is essentially based on pre-theoretical intuition, and needs to be carefully elaborated and critically assessed. Indeed, I believe that, upon scrutiny, that basic idea turns out not to be as compelling as it may seem at first, in metaphysics as well as in epistemology.

### 3 Responding to the Objection

Building on Aikin (2005), Bliss (2013) suggests that objections such as RBO<sup>3</sup> can be defused by distinguishing between the mediate and the global perspective on any given regress. The mediate perspective is that according to which at each point of the relevant 'chain' of entities an analysis is sought, and given, for that level only. The global perspective, instead, aims to analyse facts about the whole, i.e., the chain itself. The idea is that from the mediate perspective the regress is not vicious even in the case of infinite chains, although it is from the global perspective. This is because

''[t]he appearance of an infinite regress should not lead us to conclude that nothing within the regress has the property under consideration [...] but rather that not everything about the possession of the property that needs to be explained has been'' (2013; 408).<sup>4</sup>

That is, although a final and all-encompassing explanation cannot be obtained, sticking to the mediate perspective one obtains some explanations nevertheless, and can rest assured that each one of these is entirely satisfactory. In the case of

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<sup>3</sup> Although her focus is primarily on metaphysics, Bliss discusses infinite regresses in general, not just RBO-like regresses against metaphysical infinitism. Here, however, we will adapt her arguments to our main discussion.

<sup>4</sup> An important thing to notice here is Bliss' talk of explanation, i.e., the essential reference to an epistemological element. It seems to me that there is an important distinction to be drawn between this sort of considerations and the purely metaphysical aspects of the issues being discussed; and that such distinction is sometimes, if not often, insufficiently taken into account. More on this later.

ontological priority and dependence, the regress postulated by the infinitist successfully accounts for the being of any particular entity at any particular layer in the hierarchy of reality. Indeed, this does appear to constitute an advantage for infinitism over foundationalism, as foundationalists necessarily leave unexplained the being and nature of at least some entity—the ungrounded entity or entities that ground(s) everything else. Still, there might be more to say.

It is not my intention here to examine Bliss' suggestion in detail. For the purposes of the present discussion, I will only point out one particular worry one may have with it, which will lead us to the identification of a different—and, I believe, more forceful—answer to RBO. To begin with, both RBO and the answer to it based on the mediate/global distinction presuppose a certain model of ontological structure. It is what one may call the 'transmission model' of being, whereby the being of an entity at a given level of reality  $L_n$  is fully obtained, in a yes/no, all-or-nothing fashion, from the entity or entities at the immediately prior level  $L_{n-1}$ . This is exactly why, I take it, Bliss rules out in principle the possibility of providing a satisfactory account at the global level, that is, of "how the whole (possibly infinite) lot taken together gains the property under consideration" (Ib.). Indeed, if the existence of something is accounted for in terms of the existence of its parts at the level immediately below it in the metaphysical hierarchy—i.e., the being of the composite 'transmitted' to it from its components -, a local explanation at each level can be formulated. But such an explanation is necessarily obtained at the price of accepting the impossibility of global accounts, as the latter obviously cannot rely on anything acting as 'transmitter', or 'source' of being. If this diagnosis is correct, however, two important consequences follow.

On the one hand, one could reasonably claim that the fact that the transmission model of being is in the background threatens to undermine the usefulness of the very distinction between the mediate and global perspective. For, it is certainly true, as we just acknowledged, that one can insist that an explanation of the being (or being justified) of  $L_n$  is completed when one uses the being (or being justified) of level  $L_{n-1}$  as explanans.<sup>5</sup> But, since on the transmission model this is because whatever inhabits level  $L_{n-1}$  'passes on' something that it 'possesses' to whatever inhabits level  $L_n$ , it is only natural to ask how the entity or entities at level  $L_{n-1}$  obtained the key element that gets transmitted in the first place! Not surprisingly, defenders and detractors of the idea of 'virtuous' infinite regress generally disagree exactly on this. Namely, on whether a 'local explanans' of the sort one obtains by endorsing a mediate rather than global perspective on a given infinite regress can be deemed satisfactory once one considers that it, in turn, requires another explanans of the same type, the latter requires yet another explanans of the same type, and so on. I, for one, find this problem pressing for infinitists who accept the transmission model of being.

More importantly, at any rate, it seems likely that the enemies of (epistemological and/or metaphysical) infinitism will, in particular, not be convinced by the

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<sup>5</sup> Again, I follow Bliss in talking of explanation here, but bear in mind that what is relevant for our discussion is the mind-independent structure of reality, not the structure of the explanations we (may) provide for it.

mediate/global distinction, and will accordingly insist that the position is to be discarded because based on a vicious regress. After all, their basic assumption is exactly that there must be an initial point in the series of links along which being is transmitted, i.e., a fundamental ground of being. At the very least, even bracketing the existence of such a fundamental ground, some sort of 'progress' should be made as one moves along the series. If not the defeat of supporters of infinitism, the foregoing would at least seem to indicate an unpleasant stalemate.

In view of this, the prospects for a more radical, alternative approach, whereby the global perspective is somehow re-evaluated, certainly appear worth exploring. The rest of this paper is devoted exactly to identifying such an alternative approach. To start doing so, let us once again look at the epistemological debate on the nature of justification.

In constructing his recent defence of infinitism as the best (if not only) way to respond to Agrippa's trilemma, Peter Klein rejects precisely the view that justification is transmitted from one belief to another. To replace that, he opts for an 'emergence model' according to which justification comes out from the chain of reasons as a whole (see, for instance, Klein 2007). A sophisticated defence of this idea has been recently provided by Peijnenburg and Atkinson (2013), and will be the basis for our defence of metaphysical infinitism in what follows.<sup>6</sup>

First of all, Peijnenburg and Atkinson assume that 'r is more probable if p is probable than it is if p is not probable' is a rather plausible analysis of 'p is a reason for r'. On this basis, they argue that, setting  $0 < \text{Prob}(p) < 1$ , one obtains all the desired results. In particular, Peijnenburg and Atkinson show that, inserting intermediate reasons between p and r, it follows that

"the unconditional probability of r,  $P(r)$ , draws closer and closer to its final value as we add more and more links. In the limit that the number of links goes to infinity it can be shown that [...it] is exact and well-defined" (Peijnenburg and Atkinson 2013; 553).

Thus, the more one proceeds in the chain, the more one approaches the final value, and the fact that the chain is infinite is integral to the process, rather than an obstacle to it. To the reply that this in any case seems to presuppose the initial p as a basic, fundamental ground for justification—which an infinitist cannot accept for evident reasons—Peijnenburg and Atkinson respond by pointing out that, to the contrary,

"as the chain of reasons lengthens, the role of p becomes less and less important until it dies out completely. At the end of the day, the probability of r is fully determined by the conditional probabilities" (Ib.; 556, emphasis added).

This is, obviously enough, very important for our present purposes: for, it goes to show that, contrary to the transmission model, the emergence model is such that an

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<sup>6</sup> This, it goes without saying, doesn't mean that I am committed to the emergence-based infinitist model of justification as the most compelling model of justification, or as the model that epistemologists should agree on or converge towards. For my present purposes, it is enough that certain general features of the model can be usefully transferred to the metaphysical domain.

initial source of justification need not be postulated, not even as something that is reached in the limit. Translating in terms of metaphysical structure, based on the results just reported one can argue that the being of whatever exists as part of material reality might be fully determined by an infinite series of parthood/dependence relations whereby the infinity of the series is the fundamental requisite for the being in question to be fully realised. Paraphrasing Peijnenburg and Atkinson, and taking  $r$  to denote what exists (or, at any rate, the proper part of it that one wishes to provide a metaphysical analysis of), 'at the end of the day, as the chain of dependence lengthens, the full existence of  $r$  is fully determined by the 'intermediate existence' of all the levels of reality which are prior to that of  $r$ '. Without going as far as to say that it enables one to deal, say, with the infamous question 'why is there something rather than nothing?', it is sufficient here to stress the significance of this change of perspective, which explicitly refuses the idea that every complete metaphysical analysis should be based on a finite number of entities, such that it can be carried out in a finite number of steps and be expressible in a finite number of sentences.

According to the emergence model of being, then, the metaphysical structure of priority and dependence gives rise to a dynamics analogous to that underlying the convergent series

$$X=1/2+1/4+1/8\dots+1/2^n.$$

which converges towards 1 as  $n$  approaches infinity (and never becomes higher than 1). The need for metaphysical analysis to go on ad infinitum, on this construal, ultimately turns from representing a seemingly insurmountable problem to indicating the key intuition behind infinitism: i.e., to repeat the slogan, that the being of  $x$  is given only when, and only because an infinity of entities more fundamental than  $x$  is also given.

This formulation of metaphysical infinitism based on the emergence model of being re-establishes the full internal coherence of the position by getting rid of the very idea of a basic level that all being ultimately comes from through a transmission process. While partial analyses of the ontological nature of what exists at a certain level of mereological complexity may still be provided along the lines proposed by Bliss, then, global analyses also become possible thanks to the fact that the infinite, so to put it, starts playing an active role, and progress is made as the chain lengthens.

Having presented the fundamental features of the 'emergentist' version of metaphysical infinitism, it is now time to consider some objections that might be formulated against it. This will be done in the next two sections, which will deal with arguments questioning the internal consistency and the usefulness of the position, respectively. The first objection that will be discussed, in particular, will allow me to say more about the relevance of the distinction between metaphysical structure and explanatory structure, which I only hinted at in passing so far.



#### 4 Three Objections: Is Metaphysical Infnitism Really Coherent?

A worry with the above arguments might be that Peijnenburg and Atkinson provide a probabilistic model according to which justification accumulates gradually as one moves along the chain of justification relations, so being only partial at the lower layers; but being is, instead, an all-or-nothing matter, and cannot come in degrees; from which it follows that the proposed analogy breaks down at a crucial juncture. At a first glance, this looks like a serious objection.

One possible strategy for neutralising it is, obviously enough, to allow for being to come in degrees. The idea that being comes in degrees has most prominently been endorsed by some defenders of presentism in the philosophy of time (see, e.g., Smith 2002), and has recently been given a more general formulation and defence (see McDaniel 2009, 2010; Turner 2010). It looks as though, if such a view were regarded as plausible, it could ground a coherent model of the emergence of being in a metaphysical infinitist setting. However, the view is in fact contentious and, therefore, cannot be expected to do much more in favour of metaphysical infinitism than convincing those already converted.

Be this as it may, at any rate, there is an important alternative for the metaphysical infinitist, or so I believe. Such an alternative relies on a crucial distinction that is now time to elaborate upon more fully. That is, the distinction between i) what exists (or is justified) on the one hand, and ii) the process of conceptually analysing existence (or, seeking actual justification, respectively)—most likely, in search of some sort of explanation—on the other hand. The distinction is important, and needs to be articulated with care. To do this, consider first the problem with justification. Infinitists such as Peijnenburg and Atkinson do acknowledge that an epistemic subject can only have access to a finite set of justifying beliefs at any given time, and perhaps try to gain access to more and more such beliefs as time goes by, but without possibly reaching a final step. However, they do not think that this fact represents a problem for their position. For, their basic claim about justification concerns the structure of justification itself, independently of what specific epistemic agents seeking justification for specific beliefs they possess might or might not be able to do. That is, the fundamental idea behind the defence of infinitism about justification being considered is that the structure of justification just is, and its being what it is in no obvious, direct relationship with any process of justification-seeking analysis at all. In a word, one can (and, I think, should) distinguish sharply between the process and the structure of justification, and more generally between how certain things are and the way we conceive of and use them for our (justificatory, explanatory or what have you) purposes.

Such a distinction is in fact an already familiar one. Think about Zeno's paradox of Achilles and the tortoise, where the tortoise starts running before Achilles and this allegedly determines the paradoxical consequence that Achilles never reaches the tortoise due to the fact that he has to perform an infinite number of actions in a finite time (before, that is, the tortoise reaches a different location by continuing to move). That Achilles truly has to perform such a 'supertask' can be denied by arguing that his actual motion is given as a unique whole that, although it is

analysable in terms of an infinite series of smaller parts, comprises all of them in a finite amount of time. That is, following Aristotle, it can be claimed that the distance that Achilles has to cover is a continuum which is only divided in an infinite number of intervals in *potentia*. In more recent, and undoubtedly more perspicuous, terms (see, e.g., Grünbaum 1968), by appropriately appealing to non-denumerable sets one can defuse the appearance of contradiction between a) some entity *x* having an infinite number of (actual) constituents and b) *x* being finite. On the other hand, it is true that we would have to actually go through an infinite number of steps in a infinite time if we were to fully analyse Achilles's motion in terms of successive positions (more generally, physical states) and provide an explicit description of it. For, obviously enough, every step of an actual process of conceptual analysis takes a finite time. But, surely, our (in)ability to successfully analyse Achilles's motion in these terms is simply irrelevant with respect to Achilles's being able (or unable) to reach the tortoise!<sup>7</sup> For another example, take a random segment AB. Despite the fact that AB is finite, it cannot but be defined geometrically as the shortest path on the plane connecting points A and B, constituted by an infinite collection of points in between A and B. Obviously enough, in no way does our inability to complete the task of actually drawing, or imagining, such an infinite sequence of points entail the incoherence, hence non-existence of the segment.<sup>8</sup>

In a nutshell, then, what I am suggesting is a general differentiation between i) an ontological issue about the metaphysical structure of a given domain and ii) an epistemological issue concerning what and how we can gain knowledge of, and thus formulate explanations concerning, specific parts of that domain. It should be clear from the foregoing, but it is good to make it explicit anyway, that this ontology/ epistemology divide is orthogonal to that between the issue of justification and the issue of priority and dependence. The epistemological issue of justification itself, I am claiming, has an ontological aspect related to the way reality is and an epistemological aspect related to what we can believe, know etc. about it.

Importantly, the foregoing entails, at a more general level, that priority and dependence relations, although naturally interpreted as providing us with explanatory links, need not be connected essentially with metaphysical explanation. This it seems to me, strengthens the position being proposed, in the sense that it becomes also acceptable for those who explicitly refuse, for whatever reason, to establish a tight connection between metaphysical structure and explanatory structure, or at least are doubtful about it. After all, the connection may appear intuitive, but is by no means self-evident. Additionally, refraining from committing oneself to anything like a direct link between metaphysical structure and explanatory structure is also

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<sup>7</sup> Grünbaum distinguishes between a staccato-run analysis of motion and a legato-run analysis of motion. Only in the former is motion analysed in terms of successive steps and progressively smaller distances and times. The latter simply coincides with the process of going from the initial to the final point in space taken as a unique whole.

<sup>8</sup> The epistemology/metaphysics dividing line might become blurred in limiting cases. To resort just for a moment to the infamous 'God's eye point of view' metaphor, if God were to create an infinitist universe, surely s/he could/would 'just' do it in a single act, without having to go through the infinite process of constituting all composite entities one by one – which, it seems, would take an infinite amount of time even for an omnipotent being! But perhaps God can also embrace all the infinite layers of reality in one single, clear and distinct 'representation'?

useful with respect to our critical examination of the mediate/global distinction above. For, even if one follows Bliss in presupposing a connection between explanatory relations and relations of ontological dependence, it now becomes possible to claim either that a) although satisfactory explanations can only be of the partial type obtainable from the mediate perspective, there is more to metaphysical structure, especially when it comes to the 'global' level—albeit no explanations should be expected (not in all cases, at least) there; or that b) there are two essentially different forms of explanations, depending on whether one is dealing with local or global entities and questions, and metaphysical infinitism is most fruitfully formulated and interpreted in such a way that it provides a basis for both local explanations of the form 'entity E is what it is because it is composed of entities F and G'; and global explanations of the form 'the fundamental structure of entity E is what it is because it comprises an infinite hierarchy, with F and G at the first level below, H, I, J and K at the next level...' (the real power of the position coming to the surface, however, only in the latter case). Consider again our segment AB: from the mediate point of view, only an explanation of its nature in terms of two connected parts AC and CB makes sense; but the truly fundamental account of it in geometrical terms comes, of course, from the global point of view that represents it as whatever 'emerges' from the compresence of an infinite number points in between point A and point B. A metaphysical story that is able to make sense of this appears clearly stronger than any alternative story that doesn't.

There is certainly more to say about these issues, but the foregoing will have to suffice for the time being. Getting back to the objection we are considering, the response to it that we can formulate now is that being might well be an all-or-nothing matter, but metaphysical infinitists need not think otherwise. For, the infinite series they postulate must be passed through in a step-by-step fashion only at the level of conceptual analysis and understanding of reality; not at the level of reality itself. Thus, there is no sense in which being should literally 'come in degrees'.

Moving on to a different, but in fact closely related, objection one could argue as follows:

- (1) Whenever one has a mereological composite, the whole is an 'ontological free lunch', i.e., it adds no ontological commitment to that implied by the parts<sup>9</sup>;
- (2) If infinitism is true, everything is a composite;
- (3) If infinitism is true, everything is an ontological free lunch [from (1) and (2)];
- (4) It cannot be the case that everything that exists is an ontological free lunch—what would be the difference between being and nothingness otherwise?;
- (5) Infinitism cannot be true [from (3) and (4)].

An assessment of this argument allows us to shed further light on the emergence model of being. Premise (4) appears sensible, thus infinitists are likely to try to

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<sup>9</sup> This does not entail that the whole has no properties additional to those of the parts – this would make the claim rather contentious. It is sufficient that the 'building material', so to put it, is not less than the material built out of it.

reject either (1) or (2). Denying (1), however, would entail the implausible consequence that whenever a composite is constructed out of simpler parts, the overall quantity of being (intended as the total sum of material entities/parts) increases. And (2) is also reasonable: if there is no ultimate level, no endpoint in the chain of dependence relations, everything depends on something, i.e., everything has proper parts.

Perhaps infinitists have to bite the bullet and resort to a *tu quoque* reaction? They might say something like this: 'Ok, I have no explanation for why being is different from nothing, and everything turns out to be a free lunch on my account. But how is your simply positing a fundamental, non-further-analysable level of things acting as the ultimate constituents of everything any better?'. Even if one concedes that a) providing explanations on the basis of a reduction of everything to a 'free lunch' is better (or at least not worse) than b) providing explanations on the basis of a brute fact concerning the existence of something from which everything derivative depends, however, this reaction is not particularly convincing. For, as in many (all?) cases of *tu quoque* argumentation, it doesn't point to the solution of a problem but only accentuates the difficulty by showing how pervasive it is.

Luckily for metaphysical infinitists, there is an alternative. It consists in pointing out an ambiguity in (3) that prevents one from inferring (4) from (1) and (2). The ambiguity has to do with the term 'everything'. Surely, (3) is true if, in agreement with a mediate perspective in Bliss' sense, by 'everything' one means 'any particular existing thing as a mereological sum of a finite number of parts'. As such, it indeed follows from (1) and (2)—infinitists do have to acknowledge that any particular composite represents no addition to the being of its constituent parts.<sup>10</sup> However, so interpreted, (3) wouldn't lead to (4), which is clearly a claim about reality as a whole, i.e., about Being as 'the emergent sum of an infinite number of dependent entities'. The latter surely does not come for free from somewhere else— this is the very point of the move from the transmission to the emergence model of being!<sup>11</sup>

Another possible objection to the above characterisation of metaphysical infinitism has to do with the notion of emergence that, I have suggested, should replace that of transmission if the infinitist model of being is to be adopted. We more or less understand, the objection goes, what it means for a new property or a new behaviour to emerge: emergence is essentially to be cashed out in terms of epistemological and/or ontological discontinuity and qualitative novelty as complexity arises. Indeed, this is illustrated pretty well by examples from physics

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<sup>10</sup> After all, wherever one decides to 'cut the chain', as it were, it is still the case that the level of reality one happens to pick is fully determined by an infinity of lower layers.

<sup>11</sup> It might be useful here to point out that the emphasis being put on 'reality as a whole' by no means pushes metaphysical infinitism towards anything like Schaffer's priority monism. To the contrary, as mentioned in the beginning, while Schaffer takes the possibility of gunk (together with other considerations that needn't entertain us here) to justify a view in which the direction of dependence relations is 'inverted' and the whole is metaphysically fundamental while the parts are dependent, here differentiating the global perspective from all local perspectives is instrumental to a conservative stance towards ontological dependence relations, which continue to flow 'from the larger to the smaller', as it were.

and biology.<sup>12</sup> But here being has been presented as entirely uniform across levels, so to put it, the being of whatever exists at the mereologically more structured and more dependent level  $L_n$  in no way differing from the being of the constituent entities at level  $L_{n-1}$ .

I think this objection reduces to only little more than merely linguistic remark. Based on the fact that the traditional notion of emergence requires both qualitative novelty and discontinuity, one may indeed wish to claim that the notion of emergence is being intended here in an inappropriate, or at any rate unusual, meaning. Yet, on the other hand, on a looser conception of it the use of the notion may still seem appropriate: for, in the metaphysical case too, as in the more traditional examples from the empirical sciences, a key role is played by some form of sharp discontinuity. In particular, for any  $x$ , the being of  $x$  does ultimately depend on the continuous and gradual amassment of the being of a hierarchy of proper parts, proper parts of proper parts, etc. of  $x$ . Yet, continuous as the process may be, the being of  $x$  is only obtained 'in the limit', i.e., when a discontinuous jump from a (no matter how large) sum of parts to a unitary whole takes place.

### 5 Three Further Objections: Is Metaphysical Infinitism Relevant?

Another family of worries concerning metaphysical infinitism may arise from the idea that, in the end, metaphysical infinitism is, independently of its precise formulation, useless.

For instance, one might remark that the possibility of gunk and junk has already been acknowledged, and monist foundationalism is compatible with the former, while pluralist foundationalism is compatible with the latter. Since, the argument could continue, priority and dependence relations necessarily go in one specific direction, it follows that either only gunk or only junk are possibilities that a theory of metaphysical structure has to worry about. Consequently, all the required explanatory work is done by some form of foundationalism (just pick the right one to neutralise the infinite regress at hand!), and it is pointless to have recourse to infinitism. This objection misfires, however. For, it assumes without argument that the direction of ontological priority is opposite to the direction in which infinite chains develop—so that, for instance, as Schaffer suggests, if there is gunk then (necessarily!) the whole is prior to its parts. But, of course, a fundamental component of the metaphysical infinitist thesis is exactly the denial of this assumption. That is, it is a fundamental element in the metaphysical infinitist picture that relations of dependence might point exactly in the direction in which no

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<sup>12</sup> Here's, for instance, what Mill has to say about the relationship between the non-living parts of a living whole, i.e., about life as an emergent phenomenon: "All organised bodies are composed of parts, similar to those composing inorganic nature, and which have even themselves existed in an inorganic state; but the phenomena of life, which result from the juxtaposition of those parts in a certain manner, bear no analogy to any of the effects which would be produced by the action of the component substances considered as mere physical agents. To whatever degree we might imagine our knowledge of the properties of the several ingredients of a living body to be extended and perfected, it is certain that no mere summing up of the separate actions of those elements will ever amount to the action of the living body itself." (*A System of Logic*, III, 6, 1, italics added).

fundamental, ultimate basis of being is ever to be found. Moreover, notice, only in the context of metaphysical infinitism can one have an infinity of layers on both ends of the chain, regardless of the direction of ontological dependence relations.<sup>13</sup>

This response also provides the basis for dealing with two other, interconnected criticisms, according to which metaphysical infinitism is never superior to foundationalism in terms of explanatory power. The first argument is voiced by Cameron (2008). Having rejected other ways of substantiating the foundationalist intuition, Cameron suggests that we take it (in its pluralistic, atomistic variant) to be contingently true in the actual world on the basis that

“if it is true the theories we arrive at give a better explanation of the phenomena to be explained, and hence are more likely to be true” (2008; 13).

This is to say that, *ceteris paribus*, it is a good methodological principle to always opt for foundationalist rather than infinitist metaphysical analyses of whatever phenomena we wish to explain, because they systematically appear to fit those phenomena, as it were, in the best possible way for the purposes of explanation and understanding (as these might be achieved by actual human beings, that is).

This may sound plausible, but fails to settle the dispute in favour of foundationalism, even in the weaker conception of it as at least contingently true. For, as I have already argued, it might be natural to select our (empirically successful) theories on the basis of their fit with our conceptual limits and requirements, but there is no reason for expecting anything like a direct correspondence between conceptual structure and metaphysical structure. Lacking such correspondence, it is rather unlikely that a comparative evaluation of finitist *vis a vis* infinitist analyses can be carried out in a fell swoop based on general *a priori* considerations; and much more likely that such a comparison should be carried out on a case by case basis, and taking into account a range of different factors.<sup>14</sup> Moreover, one should also consider scenarios in which, contrary to what is tacitly presupposed in the objection, we do not have at our disposal both an infinitist explanation and a foundationalist explanation to choose from. Indeed, in several cases metaphysical infinitism has been presented as the only approach able to provide ‘non-ostrich’ explanations of certain philosophical problems, *i.e.*, explanations that do not simply rely on the assumption of something as a basic primitive and/or a non-further-explicable fact. Without entering into details, this has been argued to be the case, for instance, for the ontological constitution of facts and Bradley’s regress (Orilia (2006, 2009), for the notion of literal contact between extended objects (Zimmermann 1996) and for the analysis of partial similarity facts in terms of partial identity (Morganti 2011).

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<sup>13</sup> To be clear, this doesn’t mean that infinitism turns into coherentism: I am not talking about mutual dependence relations going both in the top-down and the bottom-up direction, but rather about an infinite series with a precise direction but neither a specific starting point nor a definite end point (in the terms used in the introduction, that is, a series that is gunky and junky at the same time).

<sup>14</sup> What counts as a good, or better, explanation is not easily and univocally determined in all cases. In particular, it cannot be taken to simply coincide with quantitative economy. And even how exactly Ockham’s razor cuts is not so easily determined, after all.

Another argument in the surroundings is that metaphysical infinitism is not interesting in practice, because our best available explanations of empirical facts, i.e., scientific explanations, are never of the infinitist type. This sort of objection purports to exploit the undeniable historical fact that, at least from Newton onwards, the (Democritean) foundationalist paradigm seems to have become an undisputable starting point for every scientist. Think, for instance, of the worldview that appears to be implicit in the Standard Model of elementary particles, which seems best interpreted as a ‘catalogue’ of fundamental building blocks. And notice that even those who (see, for instance, Schaffer 2003; 502–506) argue that science and its history do not really lend support to the pluralist variant of foundationalism are reluctant to abandon foundationalism altogether, and instead provide, among others, science-based arguments in favour of monistic foundationalism.<sup>15</sup> Indeed, this connects directly to the previous objection: perhaps science, and physics in particular, has followed a foundationalist paradigm because in that context foundationalist explanations have always (or nearly always) turned out to be preferable to infinitist ones? If so, shouldn’t philosophers take this into account?

Now, I agree that metaphysics should take into account the indications coming from our best science, so I cannot but regard this type of considerations to be important here. When one looks at the issue in more detail, however, it seems to me that science does not in fact have a lot to say in favour of metaphysical foundationalism, and that what we are dealing with is mere intuition, reinforced by some contingent facts from the history of physics in their more or less usual interpretation. Indeed, there is at least some evidence that shows that infinitism is not ruled out as a matter of principle in contemporary physics. Consider, for instance, so-called ‘effective quantum field theory’. Very briefly, an effective field theory is an approximation that includes the appropriate degrees of freedom to describe physical phenomena at a certain scale, but not those degrees of freedom relevant for phenomena at smaller scales. Such theories simplify the treatment of the relevant physical facts, and have been employed in a wide range of sub-domains. In connection to this, the question arises whether there is a fundamental field theory, mirroring a fundamental level of reality, at all. The dispute has been, and still is, intense, and the idea has been seriously evaluated, and continues to appear worth of careful consideration, that in fact the hierarchy of effective field theories has the structure of an infinite series. Physicist H. Georgi, for instance, stated that:

“[effective quantum field theories might form an infinite tower that] goes down to arbitrary short distances in a kind of infinite regression[,...] just a series of layers without end” (Georgi 1989; 456).

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15 Schaffer (2010), for example, argues in favour of priority monism on the basis, among other things, of the pervasiveness of quantum entanglement, the form of ‘supersubstantivalism’ that might be read in some approaches to general relativity and the causal interconnectedness of everything in the context of a Big Bang cosmological history of the universe. I believe that Schaffer’s arguments can be disputed (see, for a discussion of some of them, see Morganti 2009), both in general and in their connection to science, but this is immaterial here. More to the point, I agree with Schaffer’s historical and philosophical ‘deconstruction’ of pluralist foundationalism.

For a more fanciful, but also more illustrative, example, consider Nobel Prize Hans Dehmelt's model of elementary particles based on infinite regression (1989)—mentioned, incidentally, by Schaffer in support of his anti-pluralistic considerations.<sup>16</sup> There, the quark/lepton substructure familiar from work by Salam and other physicists is extended in such a way that there is a 'bottomless stack' with an infinite number of layers, each one populated by three new particles closely resembling each other. The stack asymptotically tends to Dirac point particles. Dehmelt explicitly presents this model as

“distinguished by great simplicity [and such that it...] eliminates Dirac's unpalatable postulate that a physical entity, such as an electron or a quark, has zero extension in space” (Dehmelt 1989; 8618).

Surely, this might be plausibly regarded as a minority, 'heretic' view. My point here, however, is not to argue for the truth of Dehmelt's model (nor, for that matter, to argue in favour of the truth of metaphysical infinitism). Rather, I take it that Dehmelt's model shows that (sensible) physicists are not in principle opposed to explanations and analyses of the infinitist type. That a principled preference for foundationalism seems to in fact be dogmatic and counterproductive seems to be what yet another physicist, Max Tegmark, has in mind when, discussing the idea of a multiverse, he claims that

“an entire ensemble is often much simpler than one of its members [and...] complexity increases when we restrict our attention to one particular element in an ensemble, thereby losing the symmetry and simplicity that were inherent in the totality of all the elements taken together” (Tegmark 2003; 51).

Indeed, multiverse cosmologies might be interpreted (or, at any rate, develop in the future) in such a way as to lend support to the infinitist idea that there is no universal object and everything is a proper part of something.

I thus conclude that the explanation-based objections to metaphysical infinitism considered here are not decisive. First, infinitism might be in such a position that it can provide an explanation of a given fact, or set of facts, while its competitors (if any) have to take the latter as primitive. Moreover, it is not obvious that the actual practice of science clearly supports the truth of foundationalism and/or essentially relies on general conceptual and methodological presuppositions of the foundationalist type.

In direct connection to the foregoing, before closing one last rejoinder must be considered which might vindicate, at least partially, Cameron's methodological argument. Infinitist explanations, one might claim, are indeed acceptable, and may even turn out to be preferable, but only provided that they are, so to call them, 'boring'. 'Boringness' denotes here the fact that - much like in Pascal's universe in which each part of matter contains a miniature universe, each part of which contains another universe, and so on ad infinitum—nothing surprising ever happens as one progresses in the (downward or upward) chain of dependence, the same type of entities/processes/mechanisms repeating themselves endlessly. The idea is that an

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<sup>16</sup> See, for instance, Schaffer (2010; 61).



infinite chain of being is surely ontologically inflationary but might be summarised in a linguistically and ideologically economical way. And that if this happens, and only if it does, then we have an acceptable infinitist explanation. Based on this, however, it could then be argued that foundationalism should hold at least in the form of a request for a 'fundamental [nomological] supervenience basis' in Schaffer's (2003; 505) sense. Incidentally, this might be said to be the case for Dehmelt's model, whose appeal in terms of simplicity lies exactly—as we have seen—in the fact that the same dynamics applies at each level, three new particle-types emerging with the characteristics required to account for the particles at the next dependent level.

While the intuition just illustrated certainly has some pull, it too calls for a careful assessment. First of all, what makes a series boring or exciting is not completely straightforward. In Dehmelt's case, for example, new forces emerge at each layer and, additionally, a unique nearly-basic 'cosmon' of immense mass is postulated as occupying a precise, 'final' link in the chain. How much does this detract from the strength of the model in terms of general structure, simplicity and plausibility? Secondly, whether simple descriptions should systematically be preferred is, in a sense, the very point at issue. Remember that the structure of being and the structure of conceptual analysis must be sharply distinguished. To be sure, boring analyses are in some sense complete at the outset, and are consequently preferable from the epistemological viewpoint. But what if the universe we inhabit were not, as a matter of fact, a boring universe?<sup>17</sup> The feeling lurks that foundationalism is being reintroduced by the backdoor for no particular reason.

## 6 Conclusions

By exploiting an analogy with epistemology and some recent work aiming to establish the philosophical respectability of the infinitist way out of Agrippa's sceptic trilemma, I have argued here that metaphysical infinitism is an internally coherent position. In particular, it is certainly coherent, and maximally forceful, once framed against the background of an emergence model (rather than transmission model) of being. When so construed, metaphysical infinitism grounds, or at least may ground, metaphysical analyses which are by no means bound to be worse than foundationalist ones. Bringing methodological considerations to bear on the matter, I argued that, as a matter of fact, metaphysical infinitism might allow for philosophical analyses where they would otherwise be impossible or not particularly strong; and that—although simplicity is desirable from the conceptual point of view—that the postulated infinite upward and/or downward chains of ontological dependence should be set aside as explanatorily poor or 'uneconomical', or at least required to be boring, i.e., based on relatively simple, finite 'generating laws', cannot be decreed a priori.

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<sup>17</sup> And, even worse, what if only non-boring metaphysical explanations were available for certain phenomena? For a discussion and defence of 'boring infinite descent', which, incidentally, also deals with Dehmelt's model of elementary particles in some detail, see Thako (2014).

In conclusion, then: nothing in what was said here was intended as an argument for the truth of metaphysical infinitism. Still,—it has been suggested contra a widespread, implicit or explicit, conviction based on the regress of being intuition—metaphysical infinitism can be given a precise formulation, so turning out to be a live option that deserves further study with respect to both its a priori conceptual basis and its connection with experience and the best science available to us.

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