Truthmaking as an Account of How Grounding Facts Hold

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Abstract

Grounding, as a way to articulate ontological dependence, faces the problem of what grounds grounding facts themselves (such as the fact that the singleton of Socrates is grounded in Socrates). This problem stems from the need to account for the holding of grounding facts, which generates the hierarchical structure of ontological dependence. Within the grounding framework, grounding facts are either ungrounded or grounded. I will first argue that neither option can provide us with a satisfactory account. The main reason is that non-fundamental entities have to be counted as fundamental or involved in the essences of fundamental entities in order for either of the two options to work—the non-fundamental is being smuggled into the fundamental.

My suggestion is to appeal to the notion of truthmaking and tackle the problem about the holding of grounding facts outside the grounding framework—instead of asking what grounds grounding facts, I ask what makes grounding claims true. Truthmaking is a prima facie relation holding between the representational and the non-representational such that the latter makes the former true. With the principle 'if ⟨p⟩ is true, then it is a fact that p,' we can account for the holding of grounding facts in a derivative sense. As a proposition contains the information about its truthmaker, the nature of grounding claims will tell us how grounding facts hold. I accept a realm of concepts which make up propositions (which might be needed already if there are propositions and propositions are compositional). These concepts will act as part of the truthmaker for grounding claims (in addition to the non-conceptual fundamental entities)—the concept of the ground must figure in the concept of the grounded. For a concept to figure in another, it is to be involved in the constitutive essence of the latter (analogous to Kit Fine's idea that the ground of a grounded entity figures in the essence of the grounded entity). This account will not smuggle anything non-fundamental into the fundamental realm. The implication is that ontological dependence stems from our different kinds of conceptualisations (perhaps of the same stuff, as in the concepts of water and H_2O), which justifies metaphysicians' armchair method.

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1 A sketch of grounding

Grounding is a primitive notion employed by many contemporary metaphysicians to articulate ontological dependence. It is devised in light of the realisation that intensional or modal notions are not fine-grained enough to do the job. The classic example is given by Kit Fine ([4]; [5]): Socrates and the singleton of Socrates. While both of them supervene upon each other or necessitate the existence of each other, it is the singleton of Socrates that is ontologically dependent upon Socrates but not vice versa[1]. So, modal notions fail to capture the asymmetry involved. Grounding is a hyperintensional notion philosophers come up with to replace such modal notions in order to formulate claims about ontological dependence. The ontological dependence of the singleton of Socrates upon Socrates lies in the fact that the singleton of Socrates is grounded in Socrates. All such grounding facts together generates a hierarchical structure of ontological dependence—Kit Fine writes, "one might first ground the normative in the natural, for example, then the natural in the physical, and then the physical in the micro-physical, thereby establishing that the normative was grounded in the micro-physical." ([7], p.44) What figures at the bottom of the structure is usually taken to be ungrounded, fundamental entities ([19]).

There are largely two different formulations of grounding facts or grounding claims. The first takes the non-truth-functional sentential operator 'x because y' with x and y to be substituted by sentences as the canonical formulation[2] such that what the sentence in the place of x expresses is grounded in what the sentence in the place of y expresses. For example, the singleton of Socrates is what it is because Socrates is what it is. This formulation is endorsed by Kit Fine ([7]; [6]). It has the virtue of metaphysical neutrality. First, this formulation does not commit one to a grounding relation. Second, it does not imply the existence of the grounded and the ground. Third, it does not tell us whether the grounded is to be reduced to the ground—even though the grounding claims would be a necessary condition for the corresponding reductions.

The second formulation takes the relational predicate 'y grounds x' as canonical. Gideon Rosen ([18]) restrains the relata to facts, while Jonathan Schaffer ([19]) allows different kinds of entities to figure in them. This formulation would prima facie commit one to a grounding relation and also to the existence of its relata. But reduction becomes a problem as the grounding relation is irreflexive—this problem leads to

the more complicated formulations of grounding as a quaternary relation ([11]; [20]).

No matter which formulation one adopts, there is a problem that confronts all grounding theorists—what grounds the grounding facts or grounding claims[3] themselves? We know that the singleton of Socrates is grounded in Socrates. But what makes it so? It should be a matter of fact that something is grounded in something else. But what grounds do such grounding facts have? How can they hold if they are not grounded? How can we tell whether a purported grounding fact holds or not?

2 The problem of what grounds grounding facts

As noted in the previous section, all the grounding facts together generate a hierarchical structure of ontological dependence with fundamental entities at the bottom. The holding of this structure is predicated upon the holding of those grounding facts. But how can they hold? It is intuitively true that the fact that London is a city is grounded in certain facts concerning the complex physical structure of the area designated by 'London'.[4] But why? Why can't it be the reverse? Why can't it fail to hold? This grounding fact and others are essential to the standing of the hierarchy of ontological dependence. So, an account of the holding of such grounding facts is necessary to the account of ontological dependence.

There are two options within the grounding framework: Grounding facts are either grounded or ungrounded[5]. I will consider the second option first. Let's use the following names for our exposition:

> L = the fact that London is a city
>
> P = the whole of the facts concerning the complex physical structure of the area designated by 'London' (which we assume to be fundamental)
>
> G = the fact that L is grounded in P.

According to the second option, grounding facts are ungrounded. So, in our example, G is ungrounded. The problem is that under any reasonable conception of fundamentality, G would then be fundamental.[6] But, G contains a non-fundamental component, i.e. L, provided that cities are not fundamental. Given that something fundamental cannot contain any non-fundamental component ([6]; [21], ch.7.2-7.3), G is not fundamental. Therefore, G should not be ungrounded.

This objection presupposes that a grounding fact is composed of a grounding relation and its relata in a certain way (perhaps as a non-mereological composition ([1])). But it might be argued that we can take grounding facts as atomic such that L and P would not be components of G in the above example. So, even if grounding facts are ungrounded, they would not contain any non-fundamental component, and thus they would not be counted as non-fundamental.[7]

This atomic conception of grounding facts resembles what David Lewis calls 'the magical conception' of structural universals ([14]). Given the factivity of grounding, a grounding fact necessitates the holding of the ground and the grounded. In my original presupposition, it's easy to see how this necessitation works, as a grounding fact is composed of a grounding relation and its relata. But with grounding facts being atomic, they do not involve the grounded and the ground as their components. Thus the grounding facts, the grounded, and the ground seem to be wholly distinct entities. It's hard to see how such necessitations can hold between them—it violates the Humean principle that there is no necessary connection between wholly distinct entities. Such necessitations can only hold as a stipulated brute modal fact—a mysterious one. Moreover, there is the question about how a certain grounding fact can be identified as G. Calling it 'G' does not make it so. There seems to be no way to distinguish one particular grounding fact G from other grounding facts. Perhaps we can postulate some further fact about the necessary connection among G, P and L to account for the necessitation and the identification of G. But then the question about the holding of this further fact will have to be raised again—if it's atomic, it falls victim to the arguments in this paragraph; if it's composed of G, P, and L in a certain way, then it will contain some non-fundamental component, so it can't be ungrounded.[8]

Furthermore, even if ungrounded atomic grounding facts somehow succeed in doing the work they are supposed to do, we can still point out another involvement of non-fundamental entities in the fundamental realm—the essence of an ungrounded grounding fact (i.e. what it is for a grounding fact to be that grounding fact) must involve entities that are not fundamental. (My conception of essence follows from Kit Fine's—see n.12.) So, there are at least two ways to cash out the idea that an ungrounded grounding fact unduly involves non-fundamental entities.

But why can't something fundamental contain or involve anything non-fundamental? I have no room to argue for it, so I will only put it metaphorically: God does not have to create cities in order for the

world to have cities—God only creates what is fundamental and everything non-fundamental follows. Or, if we had a language that completely carves at the joints of reality, expressions referring to facts about cities would not figure in that language ([21]). Without any principled reason to suggest otherwise, fundamental grounding facts should not be exempted from this constraint.

The above strategy which takes grounding facts as ungrounded is mentioned by Schaffer ([19], p.373, n.32) in passing. He says that "grounding stands outside the priority ordering [i.e. the aforementioned hierarchy] altogether, imposing structure upon it." But according the Schaffer's own definition of fundamentality—for any x, x is fundamental $=_{df}$ nothing grounds x ([19], p.373)—such grounding facts must be fundamental. Supposing that G is ungrounded, it is fundamental by definition. But G is not fundamental. So G should not be ungrounded. As G is just an arbitrarily picked grounding fact, the same should hold for other grounding facts as well (unless there were some grounding relations holding only between fundamental entities[9]).

This objection hinges on a conception of fundamentality which defines it in terms of grounding. But there is an alternative proposal by Kit Fine, which takes the notion of fundamentality to be primitive. The motivation behind this approach is that fundamentality is an absolute notion, and thus it should not need a relational underpinning. Fine thinks that it is 'simply the conception of Reality as it is in itself.' ([6], p.25) This notion of fundamentality is connected to other notions. Fine defines what is basic as what is ungrounded. But what is basic need not be fundamental. For example, that abortion is wrong can be taken as basic, but there might be no fact in reality which dictates that abortion is wrong. So, the wrongness of abortion might not be factual, while it is still ungrounded. A sufficient condition for something to be fundamental is for it to be basic and factual. According to Fine, for something to be factual is for it to be factual itself or for it to be grounded in something factual. Given that G is ungrounded, it must be factual itself in order for it to be factual. Can we avoid the fundamentality of G by taking it as basic but nonfactual? If G is nonfactual, then there is nothing in reality that corresponds to G. More generally, grounding claims would then not be representational of reality, and they would just be a projection of our conception of reality onto reality, or, to put it in another way, they would just reflect our practice of talking about ontological dependences, while there are no such dependences in reality. Using Ted Sider's terminology ([21]), grounding facts would then not be a metaphysically substantive

matter (which is about reality in itself), but instead merely a conceptually substantive matter (which is about our conceptual scheme). As grounding is intended to carve out the hierarchical structure of ontological dependence in reality ([19]), grounding should be metaphysically substantive. Therefore, grounding facts should be factual rather than nonfactual. Given that grounding facts are factual and ungrounded (i.e. basic), they are fundamental. So, this alternative conception of fundamentality cannot avoid the fundamentality of G, given its ungroundedness. As a result, G should not be ungrounded.

What if we take grounding facts to be grounded? This approach does not commit us to the fundamentality of grounding facts, so it avoids the objection above. But the next question is: in what are grounding facts grounded? There are at least four possible candidates:

(1) A grounding fact is grounded in the ground involved in itself.

(2) A grounding fact is grounded in the essence of the grounded entity involved.

(3) Some grounding facts are fundamental and they ground other nonfundamental grounding facts.

(4) A grounding fact is grounded in both the grounded and the ground, i.e. it concerns an internal relation which holds in virtue of the holding of its relata.

I will consider each of them one by one.[10]

(1) Louis deRosset ([3]) takes the ground involved in a grounding fact as the ground of that grounding fact itself. Using our example, G would be grounded in P. But here we have another grounding fact apart from G, i.e. the fact that G is grounded in P ('G+'). Following the principle that the ground in a grounding fact grounds the grounding fact itself, G+ is also grounded in P. Now we have another grounding fact, i.e. the fact that G+ is grounded in P ('G++'). Following the same principle, G++ is grounded in P. This chain of grounding facts will go on *ad infinitum*. All of them will be grounded in P.[11]

A question arises: what is it about P that makes it the ground of all these grounding facts? For all these grounding facts to hold, there must be something in the fundamental reality that grounds them. Under the supposition that they are grounded in P, there must be something about P that makes it the ground of these grounding facts. It is reasonable to think that it is in the essence or nature of P that it grounds these grounding facts. If so, it would be in the essence of P that P grounds G.

As G contains a non-fundamental component L, the essence of P would involve something non-fundamental.[12] Given that the non-fundamental cannot be involved in the fundamental, the essence of P cannot involve facts about cities. So, it fails to ground G and other grounding facts in the chain.

It might be argued that P can ground G and other grounding facts without any involvement of these grounding facts in its essence. So, while P grounds these grounding facts, P could hold without grounding these grounding facts. But grounding (at least in the metaphysical sense under consideration) implies metaphysical necessity ([7], sect.1.1). If P can exist without grounding these grounding facts, then P is not the ground for them. The reason is that there is some possible world where P holds without the holding of L, G, and other grounding facts in the chain. To consider an example, water is grounded in H_2O. But it would be wrong to assert this grounding claim, if H_2O can exist without the existence of water.

deRosset ([3]) argues that we should distinguish a grounding story (what he calls an 'explanatory story') from a ground with regard to the same grounding fact. He provides an analogy: the fact that it is chilly or windy is grounded in the fact that it is chilly. In order to make this grounding claim, some 'ancillary material' is needed, such as something that concerns the nature of disjunctive facts, which might say that a disjunctive fact holds iff at least one of its disjuncts holds. But this ancillary material is not a part of the ground for the disjunctive fact—only its disjuncts can be the ground. In his analogous example, the nature of disjunctive facts is not part of the ground for the fact that it is chilly or windy. The ground for it is just the fact that it is chilly. The nature of disjunctive facts figures only in the grounding story. Analogously, the connection between cities and certain complex physical structures need not figure in the ground for those cities. It can just be a part of the grounding story. So, in our example, non-fundamental elements like facts about cities need not be involved in the essence of P.

For the things that figure in the grounding story to hold in reality, they must be either fundamental or grounded in the fundamental. For otherwise, the grounding facts would not hold in reality, given their partial dependence on the grounding story. In the case of the nature of disjunctive facts, we can take it as a general fundamental metaphysical law, or we can take it as the essence of everything fundamental at all—everything is such that for any disjunctive fact, it is grounded in at least one of its disjuncts.

But this treatment is not applicable to the grounding story needed in G. To have something akin to the notion of disjunction in the fundamental is not implausible—for example, Ted Sider might want to have it as part of the structure of reality, out of the consideration that the notion of disjunction might have to figure in the robustly best theory of the world ([21]). But to have facts about cities in the fundamental is implausible. So, in order for the grounding story for G to hold, the connection between cities and certain complex physical structures must be grounded in something fundamental rather than being itself fundamental. But what can ground it except for P? Then again, we would have the involvement of facts about cities in the essence of P, which is implausible. Therefore, P cannot be the ground for G. More generally, grounding facts cannot be grounded in the grounds involved in them.

(2) Kit Fine ([7], sect.1.11) proposes to have the essence of the grounded involved in a grounding fact to be the ground for that grounding fact itself. Using our example, G would be grounded in the essence of L. But we have another grounding fact apart from G, i.e. the fact that G is grounded in the essence of L ('G*'). Following the principle proposed by Fine, G* is grounded in the essence of G. Now we have another grounding fact, i.e. the fact that G* is grounded in the essence of G ('G**'). Following the same principle, G** is grounded in the essence of G*. Apparently, this chain will go on *ad infinitum*.[13]

Fine motivates this strategy on the basis of his conception of the methodology of metaphysics. He thinks that part of the investigation into ground is the investigation into the essences of things. And, it is by discovering what the essences of the things to be grounded are that we find out what their grounds should be.

This approach raises the question about what grounds the essences of the grounded involved in the chain of grounding facts. If the grounding facts are to hold in reality, the essences that ground them must be either fundamental or grounded in something fundamental. Given that the essences of the non-fundamental are not fundamental, these essences should be grounded in the fundamental. Consider the essence of L which grounds G. As L is grounded in P, it is natural to think that the essence of L is also grounded in P. But then it seems that P has no way to do this except for having the involvement of the essence of L in its own essence. This would amount to smuggling the non-fundamental into the fundamental. There seems to be no other plausible ground for the essence of L (let alone the essences of G, G*, G**, ..., *ad infinitum*) which does not involve this kind of smuggling. So, Fine's approach is

implausible.

(3) The third possible approach takes some grounding facts as fundamental and it is these fundamental grounding facts which ground other grounding facts. There are at least two problems about this approach. First, it is unclear how fundamental grounding facts can ground non-fundamental ones. The fundamental grounding facts are supposed to hold between fundamental entities. For example, in an ontology with Aristotelian universals and thick particulars as fundamental entities, they should stand in fundamental grounding relations to one another. Suppose that physics tells us what counts as fundamental properties and particulars. It is difficult to see how such fundamental grounding facts can ground the grounding facts holding between cities and fundamental universals plus particulars. For them to do so, they should involve non-fundamental grounding facts or entities in their essences. So, this leads us to the second problem—for this approach to work, one has to smuggle the non-fundamental into the fundamental.

(4) The last possible approach is to take grounding as an internal relation. An internal relation holds in virtue of the existence of its relata. The classic example is resemblance: given two objects, any resemblance relations between them hold merely in virtue of the existence of the two objects. So, these resemblance relations are not anything ontologically over and above the two objects in question. In the case of grounding facts, we can say that grounding facts are grounded in the holding of both the grounded and the ground involved. In our example, G is grounded in the holding of both L and P.

The problem with this approach is that it gets the ontological priority wrong—we won't have the grounded entity unless the grounding fact holds. The grounded holds only in virtue of its being grounded in the ground, i.e. the holding of the corresponding grounding fact, and the holding of the ground. We cannot say that the grounding fact holds in virtue of the grounded and the ground involved. For example, L holds in virtue of the holding of G and the holding of P. We cannot say that G holds in virtue of the holding of L and P. That would result in the wrong order. So, this last approach doesn't work.

The above considerations lead us to an unfortunate result: under the framework of grounding, we cannot account for how grounding facts hold, no matter whether they are taken to be grounded or not. But the holding of the grounding facts is what gives us the hierarchical structure of ontological dependence. If their holding is in question, the structure will be in question as well. The grounding talk is used to replace modal

notions to articulate theses of ontological dependence. But if we cannot explain why and how grounding facts hold, the grounding talk will only let in a novel but suspicious way of speaking. For example, we want to say that the singleton of Socrates is grounded in Socrates—this is how we articulate the ontological dependence between them. But if when asked about how this grounding fact holds, we have no satisfactory answer, then it would seem that we have no way to assess the truth of different grounding claims, while we have a clear grasp of the ontological dependence of the singleton of Socrates upon Socrates. This points to a discrepancy between our preferred articulation of a thesis and the wanted thesis itself, which is going to undermine the value of the grounding framework.

3 Truthmaking as a way out

From the above considerations, we can see that solving the problem of what grounds grounding facts under a framework of grounding faces insurmountable difficulties. Perhaps a way out can be found by a reconstrual of the problem such that it can be addressed independently of a framework of grounding. Such a reconstrual is not identical to the original problem, but it can address the bigger problem of how grounding facts hold. My suggestion is to make use of the notion of truthmaking.

Truthmaking is a prima facie relation that holds between a representational entity (such as a proposition or a truth) and a non-representational entity (such as a fact) such that the representational is made true by the non-representational (or something representational whose representational nature is not essential for it to be the truthmaker)[14]. It tells us why a proposition[15] is true, under the supposition that the non-representational determine the truth-values of the representational. For example, the proposition ⟨Jack is a man⟩ is made true by the fact that Jack is a man (or, if one does not have such a macroscopic fact in one's ontology, then one can have anything that ontologically amounts to this fact as the truthmaker for the proposition).[16]

How do we make use of truthmaking to help solve the problem? First, grounding facts can be expressed by propositions. So, G can be expressed by the proposition ⟨the fact that London is a city is grounded in the whole of the facts concerning the complex physical structure of the area designated by 'London'⟩. Then with the principle—

(TF) if the proposition ⟨p⟩ is true, then it is a fact that p[17]

—we can answer the question about how grounding facts hold by answering the question about what makes grounding claims true.

This approach apparently resembles Fine's canonical formulation of grounding—sentences of the form 'p because q.' But Fine does not ask the question about what makes such claims true. He simply sticks to the framework of grounding to ask what grounds them, which leads him to the implausible treatment we have considered in the last section (i.e. the grounding facts are to be grounded in the essences of the grounded). But once we adopt the framework of truthmaking, we can address the problem from a different perspective. Instead of asking what grounds a fact, we ask what it is that makes true a proposition.

We know that it is Jack that makes ⟨Jack exists⟩ true, just like we know that the singleton of Socrates is grounded in Socrates. A question similar to what grounds grounding facts arises: what is it that makes it the case that Jack makes ⟨Jack exists⟩ true? Or more generally, what is it that makes it the case that a truthmaker makes a certain proposition true?

The answer lies in the nature of a proposition. To understand a proposition involves the understanding of the circumstances under which it is true. Putting it in metaphysical terms, a proposition should carry enough information within itself about what makes it true and how its truthmaker makes it true. As one way to think of it, a proposition can be taken as a set of possible worlds where that proposition is true—what those worlds share in common is the truthmaker of that proposition. (Of course, this conception of propositions collapses all propositions which express necessary truths into one, fails to distinguish distinct propositions[18], and neglects the different ways in virtue of which a proposition can be true[19]. Stephen Yablo ([23]) tries to use the subject matter of a proposition as a way to carve up the logical space into divisions which account for the different ways for that proposition to be true or false. He also constructs impossible worlds to deal with the problem created by necessary truths. The notion of proposition here is not predicated upon the success of his project, but I insist that there is a intuitive sense that a proposition should be fine-grained enough to carry enough information about what makes it true and how its truthmaker makes it true.) For example, ⟨Jack exists⟩ carries enough information to tell us that its truthmaker is Jack, and the existence of Jack is going to make it true. Similarly, grounding claims themselves should carry enough information in their nature to indicate what things make them true and how they do it.

We face a problem immediately. We know that ⟨water exists⟩ is true in virtue of the existence of H_2O. But it isn't the case that the understanding of ⟨water exists⟩ involves the understanding of the concept of H_2O. So, the nature of ⟨water exists⟩ doesn't carry enough information about its truthmaker. The solution to this problem comes from the Kripke-Putnam conception of natural kind terms. 'Water' got its referent fixed in its baptism through ostension, which is done under the supposition that whatever shares the hidden structure of the target of ostension is to be referred to by 'water' ([16]; [12]). We can extend this treatment of the term 'water' to the concept of water. Assuming that the concept of water figures in the proposition ⟨water exists⟩, we can understand the proposition ⟨water exists⟩ without knowing what its truthmaker really is. Knowing what its truthmaker is depends on the a posteriori studies into the hidden structure of water, which is the job of scientists. With Putnam's linguistic division of labour in mind, the definite answer to the question about what makes ⟨water exists⟩ true is deferred to the scientific experts ([16]). But it is still in the nature of ⟨water exists⟩ that it is to be made true by the existence of whatever the scientists take to be water, because it is the concept of water that carries the information about the sample-referent of water whose hidden structure is to be discovered by scientists. The people who know that water is H_2O and the people who don't know that would have the understanding of the same proposition (but not the same understanding).[20]

How then do grounding claims carry enough information about their own truthmakers? Take ⟨water is grounded in H_2O⟩ as an example. Given that the concept of water refers to a bunch of stuff, if that bunch of stuff turns out to be H_2O upon some scientific investigations, then the grounding claim is true. Why is it true? My answer is:

(1) water is H_2O,

(2) the concept of H_2O is more natural or fundamental or real[21] than the concept of water; and

(3) there is some portion of fundamental reality which matches the nature inherent in the concept of H_2O or there is some portion of fundamental reality which matches the nature inherent in a certain concept Q such that ⟨H_2O is grounded in Q⟩ is true.

It is a posteriori investigations that lead us to know (1). But given that water is H_2O, the concept of water and the concept of H_2O have the same referent but different senses (the case here is similar to the one

between the concept of Phosphorus and the concept of Hesperus) ([8]). What (1) tells us is the identity of reference between the two concepts. But they differ at least in that the concept of H_2O figures in the essence of the concept of water (see n.22), and this is not the case conversely.

But this kind of identity is not sufficient to account for the truth of grounding claims. Generally speaking, the grounded is more fundamental than its ground. (2) tells us exactly this. Moreover, given the factivity of grounding, there should be something in reality which matches the concept of the ground—this requirement is fulfilled by (3). I take this matching as primitive (for example, H_2O matches the concept of H_2O), similar to the notion of joint-carving in Sider 2011 ([21]).

This account of the truth of grounding claims seems to require a rich ontology at the fundamental level. First, we need concepts as abstract representational entities out of which propositions are composed. Second, we need a primitive ordering of different concepts in accordance with their degrees of fundamentality ("the fundamentality ordering"). The concepts that match the the non-conceptual reality in itself are the most fundamental. Third, we need a fundamental ontological base of things in reality. (But we will see later that the fundamentality ordering can be avoided.)

What then is the truthmaker for a grounding claim? A truthmaking relation requires the existence of its relata. So, we have propositions that are made up from concepts in our fundamental ontology to stand for the representational entities to be made true. The nature of a proposition is going to tell us what makes it true. According to our reading of grounding claims, it is the fundamentality ordering and the portion of the ontological base matching the concept of the ground which act as the truthmaker for a grounding claim.

To apprehend the nature of a proposition need not be an a priori matter, given that propositions are made up of concepts and the nature of certain concepts (like the concept of water) is subject to external factors. For example, even though the ancient people understood the same proposition ⟨water exists⟩, they did not have the same understanding as we do, as now we know that water is H_2O. The concept of water shares the same referent as the concept of H_2O objectively, but we discovered that to be the case a posteriori.

But what if someone asserts the proposition ⟨water is grounded in CO_2⟩? The concept of CO_2 is more fundamental than the concept of water (assuming that chemical concepts are more fundamental than lay concepts), and some portion of reality matches it in the sense similar to

(3). How can we say that it is false? We need a further requirement for the grounding claims to be made true:

> the concept of the ground should figure in the concept of the grounded (analogous to Fine's idea that the ground of a grounded entity figures in the essence of the grounded entity ([5])).[22]

That a concept figures in another can be a matter of a posteriori discovery such as in the case of ⟨water is grounded in H_2O⟩, or a priori conceptualisation such as in the case of ⟨the singleton of Socrates is grounded in Socrates⟩. This requirement forces us to include its fulfilment in our truthmaking picture—we need facts such as the fact that the concept of H_2O figures in the concept of water. I would claim the such facts are nothing over and above the concepts involved in it.[23] So, we need to include concepts as the truthmakers for grounding facts. As we already need concepts to make up propositions, so there will not be any addition to our ontology.

Another problem arises with the requirement that the concept of the ground should be more fundamental than the concept of the grounded—this need not be the case: for example, with a fundamental ontology of Aristotelian universals and thick particulars, fundamental entities might be grounded in one another, and thus there is no difference in the degrees of fundamentality between the concept of the ground and the concept of the grounded. So, our requirement prematurely rules out some plausible cases of grounding. Moreover, it might be wondered whether all non-fundamental concepts can be lined up in a fundamentality ordering.

Fortunately, with the requirement that the concept of the ground figures in the concept of the grounded, a fundamentality ordering of concepts is no longer necessary to account for how grounding claims are true. The general principle is that that a concept A figures in another concept B but not vice versa is already a sufficient condition for A's being more fundamental than B. (As far as I know, there is no counterexample to this principle. The concepts that match the non-conceptual reality in itself are the fundamental concepts. They are involved in the essences of less fundamental ones. Assuming that physical concepts are the fundamental ones, they figure in chemical concepts, which in turn figure in biological concepts, and so on. This principle also matches the philosophical method of reduction—for example, if we contend that the physical is not more fundamental than the chemical, we usually can argue that either some physical concepts and some chemical concepts figure in one another, or there are some chemical concepts which have

no physical concepts figuring in them, i.e. they cannot be analysed in terms of physical concepts.) Given that the concept of H_2O figures in the concept of water but not vice versa, and a portion of fundamental reality matches the concept of H_2O in the sense of (3), it is already true that water is grounded in H_2O. The lesson is that for grounding claims to be true, we need not settle the complete fundamentality ordering of concepts—only the part of it which is due to concepts figuring in one another suffices.

To account for possible cases of mutual grounding at the fundamental level, the requirement for the concept of the ground to figure in the concept of the grounded should replace the requirement that the former concept is more fundamental than the latter. Consider the case of a fundamental ontology of Aristotelian universals and thick particulars. The concept of a universal must involve the concept of at least one thick particular (an indefinite one) instantiating it in the essence ([5], pp.287-289), and the concept of a particular (taken as a temporal slice) must involve the concepts of all the universals it instantiates in the essence. Given this fundamental ontology, with the fulfilment of the figuring-in requirement by the concepts, they are grounded in one another. Without the need to require the concept of the ground to be more fundamental than that of the grounded, we don't need to have a fundamentality ordering of concepts at the fundamental level.

To sum up my approach, I ask what makes a grounding claim true instead of what grounds a grounding fact, which can lead to a solution to the more general problem about how grounding facts hold. A grounding claim is a proposition. The nature of a proposition will tell us what makes it true and how its truthmaker makes it true. In a true grounding claim,

(1*) the concept of the ground should figure in the concept of the grounded; and

(2*) some portion of fundamental reality matches the nature inherent in the concept of the ground B, or some such portion matches the nature inherent in another concept C such that ⟨B is grounded in C⟩ is true.

The corresponding truthmaker for grounding claims includes:

(i) the concept of the ground and the concept of the grounded

(ii) the portion of fundamental reality that matches the concept of the ground in the sense indicated in (2*)

Applied to our example concerning London, ⟨the fact that London is a city is grounded in the whole of the facts concerning the complex physical structure of the area designated by 'London'⟩ is made true by (a) the concept of the fact that London is a city ('LC') and the concept or concepts of the whole of the facts concerning the complex physical structure of the area designated by 'London' ('PC'), and (b) the portion of reality that matches PC. Finally, by (TF), it is a fact that L is grounded in P.

In comparison with the different approaches under the framework of grounding considered in the last section, my approach has two virtues. First, it does not involve any vicious regress *ad infinitum*, as the one in Fine's approach. Second, it does not smuggle anything non-fundamental into the fundamental. Of course, now we have concepts at the fundamental realm. But we have to have concepts anyway if we need propositions and propositions are compositional. (Note that having concepts as fundamental entities does not imply that they are not the results of human activities.) Also, it is more reasonable to have something like the concept of city rather than facts about cities at the fundamental level, given the plausible contention that the representational cannot be reduced to the non-representational. Besides, there are well-known independent reasons for having this third realm of representational entities, as noted by Frege ([9]).

My approach retains the metaphysical neutrality of the Finean formulation of grounding without resorting to his implausible appeal to the essences of the grounded. First, we are not committed to a grounding relation, as grounding claims need no grounding relations to be their truthmakers. Second, we are not committed to the existence of the grounded and the ground, but just to the concepts of them, which are already needed in our ontology if propositions are needed and they are compositional. Third, there is no commitment to reduction, but the grounded can be reduced to the ground—as in the case of ⟨water is grounded in H_2O⟩. The relational concept of grounding holds between the concept of the ground and the concept of the grounded, which must be different concepts. But different concepts might have the same referent. In this way, the irreflexivity of grounding is secured without ruling out the possibility of reduction. In contrast, if we take grounding as a relation holding between metaphysically substantive facts, then we are practically ruling out the reduction of the grounded to the ground, given the irreflexivity of grounding.

The implication of my approach is that the hierarchical structure of ontological dependence created by the grounding facts is at least con-

ceptually substantive. Except for the concepts at the fundamental level, the set of non-fundamental concepts is not compulsory for a conceptual scheme. Instead of having the psychological, the biological, the chemical, and so on, a different set of such non-fundamental concepts can be made up and an alternative hierarchical structure can be built. So, it is just because our conceptual scheme is what it is that we have the hierarchical structure we have—here lies the conceptual substantivity. But we can still conceive of the grounding facts as metaphysically substantive—as concepts are part of the fundamental reality and the way they figure in the essence of one another is objective. Different sets of non-fundamental concepts can figure in the fundamental reality. So, even though there can be different hierarchical structures of ontological dependence generated by different sets of grounding facts, they can all be taken as metaphysically substantive.

The hierarchical structure of ontological dependence exists because we do not usually conceive of the world as it is in itself. We have different ways to conceive of the same thing, and thereby come up with different concepts of the same thing. They can be related to one another by figuring in the essences of one another, and thus we can talk about the grounding relations between them. What is the concept of water but one of the results from our macroscopic way of conceiving of the world?

This picture can justify metaphysicians' endeavours to articulate the hierarchical structure of ontological dependence just by sitting on their armchairs and relying on the results of scientific discoveries. In their armchairs, metaphysicians have access to the concepts and they try to look into the essences of those concepts in order to see their dependence relations with one another (with the help of science). Assuming that physics is going to tell us what the fundamental ontological base (i.e. the non-representational part) is, metaphysicians aim at laying out the dependence relations between our non-fundamental concepts and the fundamental ones which match the structure at the base level. As in the whole time they are working with concepts, they do not have the need to get up from the armchair to fulfil their intellectual pursuits.

4 Conclusion

If grounding is to be a useful notion to articulate ontological dependence, an account of how grounding facts can hold must be had. I have argued that no satisfactory account can be given under the framework of grounding. The notion of truthmaking can come in to help.

With a fundamental ontology of concepts as representational entities, we can have a satisfactory account of how grounding facts can hold by giving an answer to the question about what makes grounding claims true. As grounding claims are representational entities, grounding facts and subsequently the hierarchical structure of ontological dependence hold in virtue of something representational. The implication of this account is that what ontologically depends on what is a matter of our ways of conceptualising or representing the world, which means that it is a conceptually substantive matter. But given that concepts belong to the fundamental ontology, it is also a metaphysically substantive matter. Metaphysicians, sitting on their armchairs, can still play a role in articulating an area of reality for us.

My account for how grounding facts hold amounts to having ungrounded grounding facts. The implausibility of this approach from the perspective of the grounding framework has been considered in the section 2. But this approach is still plausible, as we've seen, if we can account for the holding of the ungrounded grounding facts within a framework of truthmaking. The dilemma between grounded and ungrounded grounding facts is a dilemma only if what we have in our hands is just grounding. But if we also have truthmaking, then one of the two options wins. The lesson is just that grounding is not going to accomplish everything, it might need help from other similar notions as well. But the help comes with important implications about what grounding is supposed to do. If some grounding theorist is not happy with them, he/she will have to find some other solution to the problem of how grounding facts hold.

Notes

1 It's easy to see the inadequacy of modal notions: (1) Necessarily, the singleton of Socrates exists iff Socrates exists. (2) Assume that an entity A is ontologically dependent upon another entity B iff necessarily, if A exists, then B exists. Then, (3) Socrates is ontologically dependent upon the singleton of Socrates, and (4) the singleton of Socrates is ontologically dependent upon Socrates. But (3) is false. Perhaps we can adopt (2*) instead of (2): (2*) Assume that an entity A is ontologically dependent upon another entity B iff necessarily, if A exists, then B exists, but not vice versa. But then both (3) and (4) would be false.

2 Other formulations of grounding by a relational predicate can be derived from this canonical formulation.

3 'Grounding facts' is a suitable term for the second formulation, while 'grounding claims' is more appropriate for the first formulation. But the problem of what grounds them should not hinge on the terminology.

4 For the sake of exposition, I will take grounding as a relation and adopt a liberal view concerning the relata of a grounding relation.

5 To take grounding facts as ungrounded amounts to taking them as primitive. But this has to be distinguished from the primitiveness of the notion of grounding.

6 Kit Fine ([7]; [6]) uses the term 'reality' instead, but I will stick to 'fundamentality.'

7 Thanks to the suggestion of an anonymous referee.

8 Still, one might say that even if grounding facts are atomic, they might not be simple (as noted by Lewis in the case of structural universals [14]). As an anonymous referee points out, this case about fact composition is analogous to singletons of mereologically complex entities in Lewis's Megethology ([15]). But, even though such singletons are singletons of mereologically complex entities, the mereological complexity is disregarded in the composition of classes (which are fusions of singletons). By analogy, if grounding facts are atomic, even if they are complex in such a way to link up the grounded and the ground involved, this complexity should be disregarded in the composition of facts. Also, Lewis himself argues against a conception of 'simple' which is distinguished from 'atomic' ([14], p.41).

9 A possible example is an ontology of Aristotelian universals and thick particulars as fundamental entities.

10 As pointed out by an anonymous referee, this list is not logically exhaustive. But I believe that there are no other options that are not susceptible to arguments similar to the ones that follow.

11 Note that this regress is not vicious.

12 The involvement of other entities in the essence of a certain entity follows from Kit Fine's conception of essences ([5]). A real definition of an entity articulates the essence of an entity. It can be taken as a collection of propositions, which contains objects as constituents. There are two kinds of essences: constitutive and consequential. Here our focus is on constitutive essence which tells us what the entity is. A constitutive essence is a sub-group of propositions among the collection that are not the results of logical consequence from other propositions in the collection. Otherwise, it is a consequential essence. In our example, for P to ground G, G must belong either to the constitutive essence or to the consequential essence of P. Given the non-fundamental component L in G, not matter which kind G belongs to, the constitutive essence of P would involve some non-fundamental entity. If G belongs to the constitutive essence, then the constitutive essence of P would involve G, and thus L. If G belongs to the consequential essence, the constitutive essence of P would still involve something non-fundamental, because without any involvement of L or some city in the constitutive essence there is no way that a proposition involving G can be logically derived.

13 This regress might be vicious, as going through the chain, we have an infinity of the essences of different grounding facts.

14 Armstrong writes, "To demand truthmakers for particular truths is to accept a *realist* theory for these truths. There is something that exists in reality, independent of the proposition in question, which makes the truth true." ([2], p.5)

15 I assume for the sake of exposition that propositions are truthbearers.

16 Many philosophers consider truthmaking and grounding as basically the same thing. They take truthmaking either as a restricted version of grounding ([7]) or as a species of grounding among others ([10]; [17]). But I have argued elsewhere that truthmaking and grounding should be two distinct notions ([22]). The principal reason is that the two notions have different theoretical aims: grounding articulates ontological dependences, while truthmaking articulates why the representational is true in virtue of the non-representational.

17 The 'fact' here means just how things are.

18 For example, ⟨all crows are black⟩ and ⟨all non-black things are non-crows⟩ will be the same set of possible worlds.

19 For example, the truthmaker for ⟨there is a man⟩ cannot be picked out in this way as it is true in many different ways (i.e. being made true by different men).

20 In the case of the sentence "water exists" which contains the term 'water,' we understand the same sentence with or without the knowledge that water is H_2O. Similarly, in the case of the proposition ⟨water exists⟩ which contains the concept of water, we understand the same proposition with or without the knowledge that water is H_2O.

21 These three terms are just terminological variants of the same thing ([13]; [6]; [19]; [21]). I will stick to the term 'fundamental.'

22 For a concept A to figure in a concept B is for B's constitutive essence to contain the concept A (see also n.12).

23 We can account for the holding of the fact that the concept of H_2O figures in the concept of water by considering again what makes ⟨the concept of H_2O figures in the concept of water⟩ true.

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