IN DEFENSE OF THE TRADITIONAL VIEW OF THE LOGICAL FEATURES OF GROUNDING

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Abstract. Grounding is a central notion in answering "what is fundamental." The concept is seen as primitive, which means it cannot be defined or analyzed. However, proponents of grounding think that the notion can be understood through its logical features. Some philosophers argue that grounding's logical features—irreflexivity, asymmetry, and transitivity are problematic, so the way of understanding grounding through its logical features does not work. In this paper, I'm going to argue against these ideas and show that it is necessary for grounding of being irreflexivity, asymmetry, and transitivity. At first, I'm going to argue against the counter-example of irreflexivity—mental/brain state relation. No matter brain state is identical to the mental state or the brain state determines the mental state, there will be no challenge to grounding relations of being irreflexive. In the following, I'll discuss whether asymmetric grounding fails to explain some kinds of relations. At last, I will discuss the counterexamples of grounding being transitive, and explain the worries of transitivity is unnecessary. To sum up, logical features of grounding are necessary, nevertheless, grounding would fail to show the level differences of reality, thereby failing to answer the question "what is fundamental."

Keywords: grounding, irreflexivity, asymmetry, transitivity

Introduction

As a concept introduced in the twenty-first century, grounding has come to be extremely popular. Grounding proponents like Jonathan Schaffer, and Gideon Rosen think that grounding is univocal. This means that grounding is a single relation[1] instead of a cluster that consists of subsets of relations such as composition, constitution and emergence[2]. Meanwhile, some proponents think that grounding is predicative, like Schaffer, Rosen, and Karen Bennett, who think grounding is a relation among relata like facts, objects or states of affairs[3]. They therefore also accept the corollary that this conception of grounding entails ontological commitment[4]. Others like Fine and Fabrice Correia think that grounding acts like sentence operators, so it is ontologically free/neutral[5].

Most grounding proponents think that it is primitive[6], and can neither be analyzed nor defined. What do grounding theorists mean when they claim that

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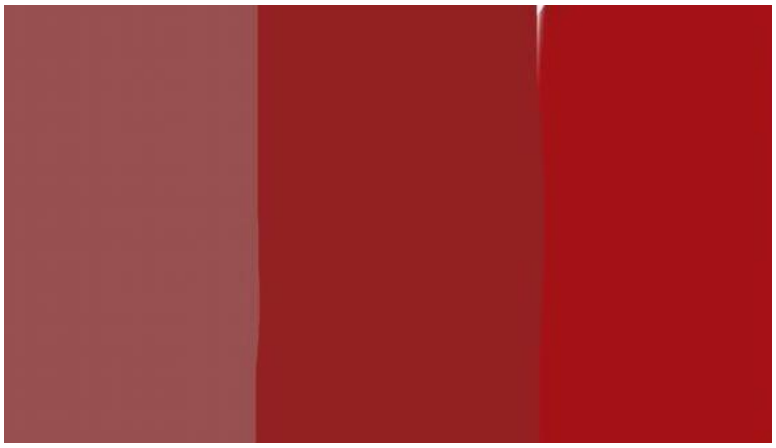
grounding cannot be defined? One easy answer is that this relation is the most fundamental one, which cannot be reduced to other relations. However, grounding proponents who agree that grounding is primitive propose that grounding can be understood via its logical features. However, the claim that grounding has logical features is a sward for grounding opponents to stab because they think it is controversial to the claims that grounding is primitive. In this paper, I'm going to defend the idea that grounding's logical features, irreflexivity, asymmetry, and transitivity is necessary and not controversial to the claim that grounding is primitive.

Logical features of grounding

As mentioned above, the logical features often attributed to grounding are: irreflexivity, asymmetry, and transitivity. I'm going to introduce these features separately. When we say that grounding is irreflexive, it means that A grounds B, and A and B are not identical. For example, figure 1 consists of three colors: rose, scarlet, and watermelon, but they all can be seen as red. In describing figure 1, we can state that fact that it is scarlet which grounds the fact that the picture is red; but the former and the latter facts are non-identical. That is, the fact that this picture is red cannot ground itself. It cannot be similarly said that the fact that it is red grounds the fact that it is scarlet. Therein lies the asymmetry and directionality of grounding. In terms of transitivity, we may say that: (I)the fact that this picture has various degrees of red grounds the fact that this picture is scarlet; (II) the fact that this picture is scarlet grounds the fact that it is red. Ergo, the fact that this picture has particular degrees of red grounds the fact that this picture is red.



Rose Scarlet Watermelon
Picture 1

After a brief introduction of the logical features of grounding, the following part of this paper will be about the discussion of each feature of grounding.

The argument about logical features and its defense

The possession of all three features is regarded as doubtful by grounding opponents and grounding proponents as well. In this section, I'm going to show disagreements to each of the logical features and argue against to them.

Irreflexivity

Let me start with the claim that grounding is irreflexive. C.S. Jenkins[7] argues against this claim on the basis of physicalism. Generally speaking, physicalists think that all matters can be reduced to the physical[8].

Firstly, Jenkins cites the classic grounding relation between mental states and brain states as an example against the irreflexivity of grounding relations because she thinks that they can be identical. The second example of treating grounding as reflexive is the grounding relation between a statue and its underlying matter. Since the statue and the matter example has a similar problem with the mental state and brain state example, I will focus my discussion on the mental-physical example.

In order to understand Jenkins' position, I will recapitulate her argument below[9]:

1) S's mental state P depends on S's brain state B.
2) S's mental state P does not depend on S's mental state P.
3) S's brain state B is identical to S's mental state P.
4) S's mental state P is different from S's brain state B.

Now, let's go through this argument. For physicalists who support reduction, it is natural to hold that "S's mental state depends on S's brain state." If we take grounding to be irreflexive, then S's mental state cannot ground itself. However, there is a popular theory in physicalism according to which S's mental state is identical to S's brain state, which is what 3) about. Statement 1) and 2) imply that S's mental state P is different from S's brain state B, which is what 4) about. If we take 3) and 4) both, here comes the contradiction between statement 3) and 4) in this argument.

Fortunately, we have two ways of solving this contradiction. We can either admit that 2) is false so that metaphysical dependence can be reflexive, or disagree with 3) and argue against that S's brain state B is identical to S's mental state P. At first, considering Jenkins chooses the first option, thus my prior job is to figure out whether grounding of been non-reflexive could be work.

As what I mentioned in the beginning of this paper, grounding is a notion intended to explain the structure of reality. One of the main motivations for using grounding is that grounding can show the level differences of reality. In other words, grounding has a hierarchical structure, so it can" help philosophers to show that the structure of reality is hierarchical. Based on this background, suppose a grounding case, which is "a grounds b, and a=b". It tells that a and b are sharing the same level, they explain each other mutually. Then the problem comes out, in this case, the grounding relation cannot be explained as which one (either a or b) is fundamental. In another word, it fails to show the level differences between a and b, which is what grounding proponents expect what grounding should do. Furthermore, reflexive

grounding is not grounding at all, it is identity instead, that's an important motivation for introducing grounding as an explanation model[10]. Jenkins' argument.

1) S's mental state P depends on S's brain state B.
2) S's mental state P does not depend on S's mental state P.
3) S's brain state B is identical to S's mental state P.
4) S's mental state P is different from S's brain state B.

On the one hand, if we accept statement 3) S's brain state B is identical to S's mental state P, then we admit that the relation between S's brain state B and S's mental state P is that of identity. Thus if we take 3), then 1) does not work, or 1) is not about grounding, if we hold that grounding cannot be identity. Given statement 4) follows from 1) and 2), it is no longer secure if 1) does not stand. So the contradiction between 3) and 4) is no longer present. On the other hand, if statement 1) works, which means the relation between S's mental state P and S's brain state B is that of grounding, then statement 3) doesn't work. To sum up, the choice of giving up grounding's irreflexive feature would result in the inclusion of identity into the concept, which is against what the proponents of grounding would hold.

Now let's move to the second possibility, where we give up the condition that "S's mental state P is identical to S's brain state B." According to Jenkins, one possible way of clarifying the difference between S's mental state P and S's brain state B is to do so with the help of hyperintensionality[11]. Briefly, when two propositions are hyperintensionally different, they can share the same truth value but have different meanings. For example, "unmarried men are bachelors" and "2+2=4" are both true but they are hyperintensionally different because of the meaning differences. Then let's come back to the mental/physical example, though "S's brain state B" and "S's mental state P" have the same truth value, but these two phrases are hyperintensionally different. With the help of hyperintensionality, if we claim that "S's mental state P is grounded by S's brain state B," it does not mean that reflexive grounding works, since S's mental state P is different from S's brain state B. As a result, it shows that grounding is hyperintensional, because the relata are different[12].

Given this background, let's modify Jenkins' argument via hyperintensionality.

1) S's mental state P depends on S's brain state B.
2) S's mental state P does not depend on S's mental state P.
3) S's brain state B is identical to S's mental state P.
5) S's mental state P is hyperintensionally different from S's brain state B.

Jenkins notes that one possible way of solving the contradiction between 3) and 4) is to introduce statement 5). Since S's mental state is hyperintensionally different from S's brain state, then there would be no contradiction between 3) and 4). The reason why she does not give up 3) directly is that she contends that S's mental state is not ontologically different from S's brain state. That is, she thinks that

hyperintensional difference is not the same thing as ontologically difference. However, recall that the motivation of applying grounding to explain the relationship between S's mental state and S's brain state, is to determine which that is fundamental. If we accept that S's mental state is not ontologically different from S's brain state, then we cannot claim that S's brain state grounds S's mental state. On the other hand, if one keeps the grounding relationship between S's mental state and S's brain state, then one accepts that S's mental state is ontologically different from S's brain state automatically.

To sum up, Jenkins would like to take away the commitment to irreflexivity in order to preserve commitment to physicalism. However, Jenkins' suggestion would make grounding incapable of doing the explanatory work —explaining reality's hierarchy structure.

Asymmetry

Besides claiming that grounding is irreflexive, grounding proponents (like Schaffer, Rosen, Raven) also think that grounding is asymmetric. Asymmetry is a necessary condition if we want grounding to explain the hierarchical structure of reality.

Before discussing the counterarguments to asymmetry, I will first clarify the set of inter-related notions including: symmetry, non-symmetry, and asymmetry. These concepts can be expressed formally as following:

R is symmetric if and only if it is necessary for all x and y that xRy implies yRx[13].

R is non-symmetric if and only if it is not necessary for all x and y that xRy implies yRx.

R is asymmetric if and only if it is necessary for all x and y that xRy does not imply yRx, and x is different from y.

Let us use marriage as an illustrative case for symmetry. Jane is married to Joy, and Joy is also married to Jane. In other words, the fact that Jane is married to Joy implies the fact that Joy is married to Jane, and vice versa. The marriage relation between Jane and Joy is symmetric. On the other hand, love is not necessarily symmetric. Suppose Jane loves Joy, but Joy may or may not love Jane. Therefore, the romantic relation between Jane and Joy is non-symmetric.

Finally, parental relation serves as an example of asymmetry. Suppose Jim is the father of Jane, which necessarily means that Jane is not the father of Jim. It can therefore be said that the parental relation between Jim and Jane is asymmetric.

Grounding proponents think that grounding, either as a relation between facts or as a sentence operator, is asymmetric, as symmetry grounding leads to circularity. Suppose that grounding is symmetric, like A grounds B and B grounds A, then there appears a vicious circle. Thus, grounding would go round and round within some facts or states of affairs, failing to characterize the whole structure of reality. How about assuming that grounding is non-symmetric? Let's go back to the romantic relationship, the non-symmetric relation does not exclude the possibility of being

symmetric, so it would also lead grounding face to circularity. However, there are still some philosophers suggesting that grounding is non-symmetric instead of asymmetric.

Gabriel Oak Rabin questions the necessity of grounding explanation to be asymmetric. At first, he gives a simple principle of grounding in order to make sure that grounding theory explains reality's layered structure:

(The Simple Principle) If x grounds y, then x is at a lower level/more fundamental than y.

However, this principle will face a dilemma. If x grounds y, and y grounds x, then x is both at a lower level of y and also at a higher level of y. Rabin thus makes some changes to the Simple Principle[14]:

(The Slightly Less Simple Principle) If x grounds y, and y does not ground x, then x is more fundamental/at a lower level than y[15].

As Rabin himself claims, he is a proponent of grounding being non-symmetric, or anti-symmetric in his words, instead of being asymmetric. He thinks that "particular individual cases of symmetric ground can be easily handled. But a full-blown symmetric conception of ground"[16] make grounding fails to explain the structure of reality, since symmetric grounding could not show the relata's level differences.

The reason why Rabin thinks that grounding relations can be symmetric occasionally because there are some relata that we can't tell the level differences, which he called incommensurable facts. When we think about the structure of reality, it does make sense that some facts can be at the same level, since hypothetically, there would not only be vertical relations but also horizontal relations in reality. On the other hand, for some chain of grounding relations that are questionable or still in the black-box, it is possible that we cannot decide the level differences of the relata among the chain. Due to these considerations, Rabin argues for the plausibility of non-symmetric grounding.

Rabin's argument has two problems. The first problem is that it is difficult to determine under what conditions make a particular symmetric case acceptable within the chain of grounding explanation. Specifically, the question is: how do we know it is both the case that A grounds B and that B grounds A?[17] The point is that if symmetric groundings are acceptable. How can we be sure that the symmetric explanations reach the end instead of just being a lazy explanation? And the next question will be: how do we make a distinction between "particular cases of symmetric" grounding relations and "full-blown" cases?[18] The second problem of Rabin's theory is whether it is necessary to explain the structure of reality all the way down. In order to answer this question, we need to recall grounding's logical features. When we talk about the whole set of features together, it means we apply grounding to a complete chain of relations. Hence, when we explain a chain of relations, whether they are also irreflexive and transitive besides being asymmetric does matter. If some relations were symmetric within this chain, it would lead to circularity, as reflexive grounding would as well. However, is incommensurableness problematic for the layered structure of reality? Yes, it is. The reason is that an incommensurable explanation means that it does not reach to the fundamental level of reality, which means it is incomplete.

Another way of questioning the asymmetry of grounding can be found in Elizabeth Barnes' work. Barnes thinks that the way some philosophers assume that ontological dependence is asymmetric is non-symmetric.[19] As Barnes said, asymmetric ontological dependence excludes many relations that were supposed to be included in ontological dependence, like universals/instantiations, states of affairs/the constituents, tropes/particulars, and numbers as nodes in a structure/the structure, events/ the bigger or smaller events. Take the pair of trope/particular as an example, based on the trope bundle theory, we can claim that a cluster of properties grounds an object A: which means that object A is grounded by its properties. It turns out that an object can be a big trope (a cluster of properties), but that is controversial because that trope cannot be independent of properties. Considering this situation, if we allow the possibility that the relation between trope and particular can be symmetric, then the problem is solved. In Barnes's view, the reason why these five pairs of relations face puzzles is that philosophers deny that symmetric dependence is part of ontological dependence. As she said, "any of the particular cases I offer can be resisted. But when viewed as a whole, the range of cases is striking…we can't maintain that dependence is asymmetric without ruling out wide swathes of this metaphysical landscape."[20]

However, Barnes' view is different from philosophers who treat grounding as a kind of ontological dependence or simply as ontological dependence, she thinks that "dependence is something distinct from theoretical gizmos—like grounding…"[21] Barnes thinks that ontological dependence does not include grounding. I'm not going to argue whether grounding belongs to ontological dependence or not, but it is worth thinking about Barnes' counterargument for grounding proponents who take grounding as asymmetric for granted. One possible reply is that if we follow the idea of the proponents of grounding that grounding is a vertical relation, then we cannot characterize the horizontal level of the reality's structure. In another word, suppose there is a grounding relation that "a grounds b," it shows that one of the relata (a) is more fundamental then the other one(b), which got horizontal case excluded. However, the symmetric relation cannot have a vertical structure.

Transitivity

Now, we move to the last logical feature of grounding, transitivity. When philosophers talk about transitivity, they think in the following way:

1 The fact A grounds the fact B.
2 The fact B grounds the fact C.
3 From ① and ② , the fact A grounds the fact C.

Generally speaking, grounding proponents assume that grounding is transitive. However, there are always exceptions, like Schaffer who gives three counterexamples to the transitivity of grounding. In this section, I'm going to argue against Schaffer's counterexamples to show that the transitivity of grounding is not problematic.

The first counterexample is called the Dented Sphere:[22]

i. The fact that the thing has a dent grounds the fact that the thing has shape S.

ii. The fact that the thing has shape S grounds the fact that it is more-or-less spherical.

iii. The fact that the thing has a dent grounds the fact that it is more-or-less spherical.

When we read statements i and ii, it is fine, but statement iii seems a bit bizarre. This is the problem that Schaffer wants to show us with the help of this grounding chain. In this case, we can imagine two relevant situations. Firstly, there is only one dent on this object which has the shape S and this object has the property of being more-or-less spherical. Let me call it Dent Ball (DB for short) and this ball has three properties, (a) being shape S, (b) having a dent, and (c) being more-or-less spherical.

As it shows, property (b) grounds property (a) because that particular one dent contributes the DB of being Shape S, without that particular dent, we cannot say DB of being shape S. Thus, there is a question of the relation between property (a) and property(c). Is there a grounding relation between (a) and (c), or it is just one property (a) with two different descriptions (b) and (c)? Based on Schaffer's argument, he says "something's having a determinate property grounds its having the relevant determinable."[23] Based on the notion of grounding, if the property of being shape S grounds the property of being more-or-less spherical, then the former is at a lower level compared to the latter. I think the jump from the fact that DB has shape S to the fact that DB is more-or-less spherical is problematic, because the fact that "DB has shape S" belongs to objective facts, but "the fact that DB is more-or-less spherical" is more like an epistemic fact (or subjective fact) for this expression entails vague judgement. From a metaphysical point of view, the jump from objective fact to epistemic fact seems problematic.

Furthermore, I think the connection between the fact that DB has shape S and the fact that DB has a dent can be interpreted in two ways. The first way is that the dent is big enough to influence the DB's being S shape, and the second way is that the dent is only part of the DB which can hardly be noticed. Under the first situation, the shape S must imply the existence of the dent. Thus, the grounding chain from i, ii and iii works, which means that the transitivity of grounding is not suspicious at this point.

Now let's talk about the second interpretation. If the dent is only part of DB which can hardly being noticed, then DB's shape could be called S without the dent.[24] As we can see, this is the point that Schaffer makes with this counterexample. However, I don't think his counterexample works. I think that even a very tiny dent, once it has been part of the object which has the property of being shape S, this dent does contribute to the object of being shape S. Thus, following the transitive principle, the fact that DB has this tiny dent does ground the fact that DB is more-or-less spherical. In other words, the question is: whether the tiny dent makes a difference to DB should be a criterion for deciding whether the tiny dent could be the ground for

the fact of being more-or-less spherical? Yes, I think it is. I think no matter how tiny the dent is, it does contribute to the object of being shape S, so this dent contributes to DB being more-or-less spherical as well.

Another situation is that DB has many dents, but the solution to this one is quite similar to before. In this part, I will only talk about the tiny dent case which is similar to the second interpretation of the first situation. First of all, let us pick up one dent from the many dents of this object. Like I discussed above, no matter how many dents DB has, the particular dent D does make contributions to the object's being of shape S, then it does make contributions to the object's being more-or-less spherical. I think the reason why this grounding chain seems to be bizarre is the relation between the fact that this thing has shape S and the fact that this thing is more-or-less spherical. As I mentioned earlier, there is a jump from the objective fact to the subjective fact within this grounding chain. Then the problem comes to be whether there is transitivity between metaphysics and epistemology. And the second problem is that the phrase "more-or-less spherical" is too vague. I think Schaffer just uses an overgeneralized phrase to describe this object which I called Dent Ball, that's the reason claim iii looks problematic. Because in his overgeneralized phrase, Schaffer has already ignored the particular tiny dent.

There is a comparatively brief way of understanding the problem of Schaffer's counterexample besides my previous redundant discussion. At first, let's go back to the notion of grounding:

If p grounds q, then necessarily (if p, then q). At the same time, it also shows that "If p grounds q, then necessarily (if not p, then not q).

Let's go back to the Dent Ball example, once we say that the fact that the thing has a dent grounds the fact that the thing has shape S, the fact that DB has a dent is a necessary condition of that fact that DB has shape S. Naturally, the fact that DB is a necessary condition of the fact that DB is more-or-less spherical. What Schaffer worries about is that if grounding is transitive, the first relatum and the last relatum would be irrelevant. However, in this case, the first relatum—the fact that DB has a dent would not be irrelevant to the last relatum—the fact that DB is more-or-less spherical via grounding. It means that these two relata would not be irrelevant because of grounding's transitive principle, they would be irrelevant just because of the case itself.

If my reply to the Dent Ball example is not that persuasive, for it still does not touch transitivity's substantial problem, then let us move to Schaffer's second counterexample. The second counterexample is about a set with three numbers:[25]

iv. The fact that c is a member of S grounds the fact that S has exactly three members,

v. The fact that S has exactly three members grounds the fact that S has finitely many members,

vi. The fact that c is a member of S grounds the fact that S has finitely many members.

Schaffer thinks the fact that whether c is a member of set S would not affect

the fact that whether set S has finitely many members. To analyze this example, I'm going to borrow Jon Litland's idea to explain why Schaffer's example is problematic. Litland stresses that the relevance among relata is different from obtaining states of affairs, and what matters about this case is obtaining of set S, hence what matters for grounding explanation is to "explain how."[26] In Litland's words, "What is important is that (a) this notion of explanation has a reasonable claim to be labelled grounding; (b) that the transitivity of this type of explanation isn't just a result of taking the transitive closure."[27] Like I said before, the reason why these three relata can be explained by grounding is that they satisfy the criteria of being grounding relations, which means these three relata follow grounding's logical features, including transitivity. On the other hand, the transitivity of grounding is not only an automatic result of the principle of transitivity, it is also a result of being non-monotonic relation[28] which excludes irrelevant facts.

According to these two considerations, the fact that set S has exactly three members and the fact that set S has finitely many members do stand in a grounding relation, so statement v is acceptable. Following Schaffer's idea, the reason why statement vi is implausible is because that whether the fact that c is a member of set S would not make a difference for the fact that set S has finitely many members. From statements iv to vi, the core character is the set S instead of any other random set that happens to have finitely many members. What makes the set S different from other random sets is the particular members it has, and member c is one of them. Based on this, member c does matter to set S, and it is a partial ground of set S. In other words, member c is one of the reasons why set S obtains. Suppose that c is not the member of set S but d is instead, then it is not that particular set S anymore, it is another set, and let's call it set S' instead. If so, in proposition vi, the set has not been the set S but set S' instead, obviously the fact the c is a member of S grounding of the fact that S' has finite number is implausible. As we can see, it is not the problem of transitive grounding, but the problem is the way Schaffer explains grounding relation via this example.

If the reply to the second counterexample of grounding's transitivity is not decisive against Schaffer's argument, let's check whether the example that "Cadmus the Cat" will put grounding's transitive principle in danger, that being Schaffer's third counterexample.[29]

vii. The fact that the creature was produced from the meeting of this sperm and that ovum grounds the fact that Cadmus is meowing

viii. The fact that Cadmus is meowing grounds the fact that something is meowing

ix. The fact that the creature was produced from the meeting of this sperm and that ovum grounds the fact that something is meowing.

Firstly, these three relata can be explained via grounding because the relation among them satisfies the notion of grounding, thus, the relation is transitive before it can be treated as a grounding relation. Secondly, since this grounding relation is non-

monotonic, when we apply grounding within this relation, it entails that the first relatum is relative to the second relatum.

In fact, what Schaffer really worries about is the irrelevant relata that transitive grounding might cause. Based on my analysis of Schaffer's counterexample, it shows that the reason why the above grounding chains are bizarre is not because of transitivity but because of the wrong application of grounding.

Conclusion

To sum up, on the one hand, the problems of grounding being irreflexive, asymmetric, and transitive come from applying or understanding wrongly the notion of grounding. This shows that the logical features of grounding are unproblematic, and we can understand grounding through its traditional logical features. On the other hand, once we give up each of these features, grounding cannot hierarchically explain the structure of reality, and also would fail to answer "what is fundamental."

Refereces

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