Grounding and Entailment[1]

The notion of grounding should be familiar. Philosophers have been concerned with it since the beginning. Take, for example, the claim that makes up one horn of Euthyphro's dilemma:

The pious is pious in virtue of being loved by the gods.

This is a claim about grounding. It says that the piety of the pious is grounded in the gods loving it, or that facts about what is pious are grounded in facts about what the gods love.

Philosophers in the recent past tended to marginalize the notion of grounding, and to give preference to substitutes such as entailment or supervenience. More recently, however, some philosophers have argued that this is a mistake. They have given us reasons to think that the notion of grounding is as clear as any fundamental notion in philosophy and that the substitutes cannot do the same work that it can do in structuring philosophical inquiry.[2]

I agree with this line of thought. There is one claim, however, that others who have explored the notion of grounding have generally endorsed, but that I find implausible. This is the claim that grounds entail, suffice for, or necessitate, what they ground. More formally:

Entailment Thesis (ET): If Q is grounded in P, then P entails Q[3]

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[1] Acknowledgements omitted

[2] See: (Audi ms), (Fine ms), (Rosen 2010), (Shaffer 2009).

[3] This formulation of the thesis suffers from a few infelicities. First, grounding is a one-many relation: one fact is often grounded in many facts. Second, though grounding is a relation between facts, entailment is a relation between propositions. Gideon Rosen provides a better formulation: $[p] \leftarrow \Gamma$ then $\Box(\wedge\Gamma \supset p)$. "[p]" picks out the fact that p, "$\leftarrow$" expresses the grounding relation, "Γ" picks out a set of facts, and "$\wedge\Gamma$" picks out the conjunction of the propositions that correspond to the facts in Γ. See (Rosen 2010, 118). We can let Rosen's formulation be the official one, and take (ET) and discussions framed in terms of it to be expository conveniences.

I believe that (ET) is false. In my view, Q might be grounded in P even though P does not entail Q.

This claim would be trivial if it were about partial grounding. Obviously, Q might be partly grounded in P even though P does not entail Q. But (ET) is about full grounding. My claim is that Q might be wholly grounded in P even though P does not entail Q.

My claim is not intended to rule out that there are reasonable restrictions on the grounding relation for which (ET) holds. For example, we might introduce a notion of reductive grounding with the stipulation that Q is reductively grounded in P just in case Q is grounded in P and P entails Q. There might be important roles for such a notion to play. My interest, however, is in the more basic, unrestricted notion of grounding.[4]

Here is the plan. In section 1, I will present some *prima facie* counter-examples to (ET), and introduce two interpretations of them, one incompatible with (ET) and one compatible with (ET). In section 2, I will consider and reject an argument in favor of (ET), which, if cogent, would show that no *prima facie* counter-example to (ET) could be a genuine counter-example. In section 3, I will develop an argument against (ET) that illuminates why some *prima facie* counter-examples to (ET) could be genuine counter-examples. In section 4, I will briefly describe an epistemological application of the idea that (ET) is false.

1. *Prima Facie* Counter-Examples to (ET)

Here are two *prima facie* counter-examples to (ET):

Accidental Generalizations. By an accidental generalization I mean a generalization that is contingent and that does not hold as a matter of natural law.

[4] It might be that there are several equally fundamental grounding relations and that (ET) holds for some and fails for others. If this is so, then my claim is that there are some fundamental grounding relations for which (ET) fails to hold.

So the generalization that everything is self-identical is not accidental. Nor is the generalization that every body exerts a gravitational force on every other body. Suppose it turns out, however, that every member of department X likes disco. This is an accidental generalization.

Suppose department X contains three members: a, b, and c. Plausibly, then, the fact that every member of department X likes disco is grounded in the fact that a likes disco, the fact that b likes disco, and the fact that c likes disco. These facts do not jointly entail that every member of department X likes disco, however. They do not rule out the possibility of an additional member who does not like disco. Hence we have a *prima facie* counter-example to (ET).[5]

Epistemic Justification. Suppose you have a visual experience as of a red light ahead. Having this experience can justify you in believing that there is a red light ahead. Suppose it does. Plausibly, justifying is a species of grounding. So we have: the fact that you are justified in believing there is a red light ahead is grounded in the fact that you have a visual experience as of a red light ahead. This provides another *prima facie* counter-example to (ET). The fact that you have a visual experience as of a red light ahead does not entail that you are justified in believing that there is a red light ahead. Suppose, for example you know you have taken a pill that will make green things look red. In this case your visual experience does not justify you in believing that there is a red light ahead.

There are at least two interpretations of the *prima facie* counter-examples to (ET). According to the first they are genuine counter-examples; according to the second they are not.

Consider the first *prima facie* counter-example. The grounded fact is that every member of department X likes disco. The grounding facts are the facts that a, likes disco, that b likes disco, and that c likes disco. Now consider this fact: the fact

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[5] (Rosen 2010) discusses the grounding of generalizations, including accidental generalizations. (Mellor 2003) uses this sort of example to argue against the view that truth-makers necessitate what they make true, which view is defended by (Armstrong 2004).

that a, b, and c are the only members of department X. Call this the totality fact. The facts about a, b, and c together with the totality fact do entail that every member of department X likes disco. What should we make of this?

> Enabler Interpretation: The totality fact is not part of the ground of the fact that every member of department X likes disco. Rather, it is an enabling condition. If it obtains, then the facts about a, b, and c ground the fact that every member of department X likes disco. But if it doesn't, then they don't.

> Completer Interpretation: The totality fact is part of the ground of the fact that every member of department X likes disco. The facts about a, b, and c are only partial grounds of that fact; to get a full ground, you need to add the totality fact.

If the enabler interpretation is correct, then (ET) is false. If the completer interpretation is correct, then, for all this *prima facie* counter-example establishes, (ET) might be true.

Every *prima facie* counter-example to (ET) admits of these different interpretations. To assess (ET), then, we must explore supplementary considerations. In the next section I take up considerations in favor of (ET).

2. Grounding and Essence

Consider facts about grounding—e.g. the fact that Q is grounded in P. What grounds *these* facts? The consensus among those who have discussed the grounding relation is that the grounds of facts about grounding are facts about essences.[6] Let us put the idea as follows:

> (Ground-Essence) If Q is grounded in P, then there is an X such that:

[6] (Audi ms), (Fine ms), and (Rosen 2010) all endorse this view.

a. It lies in the essence of X that if P obtains, then P grounds Q.[7]

We can assume the following about essence:

(Essence-Necessity) If it lies in the essence of x that p, then necessarily if x exists, then p.

Now consider the following conclusion:

(Ground-Necessity) If Q is grounded in P, then necessarily if P obtains, then P grounds Q.

Since if P grounds Q, it follows that Q obtains, (Ground-Necessity) implies (ET).

We do not yet have a good argument for (ET), however. The problem is that (Ground-Essence) and (Essence-Necessity) do not imply (Ground-Necessity). The reason why is that the X whose essence grounds the fact that P grounds Q is not guaranteed to exist whenever P obtains. We need to add that as an extra condition:

(Ground-Essence +) If Q is grounded in P, then there is an X such that:

a. It lies in the essence of X that if P obtains, then P grounds Q;
b. X exists if P obtains.

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[7] I have simplified somewhat. Both Fine and Rosen argue that what lies in X's essence are generalizations under which P and Q fall. (Fine ms), pgs 48 – 50; (Rosen 2010), pg 131. So:

If Q is grounded in P, then there is an X such that:

a. It lies in the essence of X that if a fact of kind K1 obtains, then it grounds a fact of kind K2;
b. P is of kind K1 and Q is of kind K2.

I will ignore this complication here.

(Ground-Essence +) and (Essence-Necessity) do imply (Ground-Necessity) and so support (ET).

Why believe (Ground-Essence +)? Let us immediately concede that there is some intuitive motivation for (Ground-Essence). We might put it as follows: Facts about instances of the grounding relation are themselves grounded or not. It would be odd if they were all ungrounded, and it would lead to regress if they were all grounded.[8] The most natural candidates for ungrounded grounds of facts about instances of the grounding relation are facts about essences.

This intuitive motivation does not support (Ground-Essence +), however, since it does not tell us which essences are relevant. But it is precisely on this point that the fate of (ET) depends. Consider two proposals:

> (Pro-ET) If Q is grounded in P, then it lies in the essence of P itself that if P obtains, then P grounds Q
>
> (Con-ET) If Q is grounded in P, then there is a (perhaps in some special cases empty) set of enabling conditions C such that it lies in the essences of P and the Cs that if P obtains, then P grounds Q.

P exists if P obtains. So, if (Pro-ET) is true, then (Ground-Essence +) is as well, and so the argument for (ET) goes through. But the Cs might not obtain (i.e., since these are facts, exist) even if P obtains. So, if (Con-ET) is true, then (Ground-Essence +) is not, and so the argument for (ET) breaks down.

What this shows is that the natural idea that facts about grounding are themselves grounded in facts about essences does not provide any independent support for (ET). It supports (ET) only if we already make the assumption that *prima facie* counter-examples to (ET) should be given a completer rather than an enabler interpretation.

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[8] A crucial assumption here is that a fact cannot ground itself. I will follow the majority of philosophers who have discussed grounding and accept that assumption here.

3. Grounding and Explanation

The line of thought against (ET) that I will develop in this section rests on four points.

The first two are widely appreciated:

1. Grounding is an explanatory relation. So, if P grounds Q, then: P explains Q, or Q obtains because P obtains.
2. (a) Grounding, like other explanatory relations, is non-monotonic. So, suppose P grounds Q; it doesn't follow that P and R ground Q.

Why is grounding non-monotonic? Consider an example that illustrates its non-monotony:

> The ball is red in virtue of being vermilion, but it is not the case that the ball is red in virtue of being vermilion and such that Socrates is a philosopher.

The fact that the ball is vermilion and the fact that Socrates is a philosopher do not ground the fact that the ball is red because the fact that Socrates is a philosopher is *explanatorily irrelevant* to the fact that the ball is red. Explanatory relations are non-monotonic because a relation of explanatory relevance restricts them. That is, in general, if P explains Q, or if Q obtains because P obtains, then P is explanatorily relevant to Q. And more specifically:

2. (b) If P grounds Q, then P is explanatorily relevant to Q

In light of 2(b), the third point is trivial:

3. If there are P, Q, and C such that P grounds Q only if C but C is not explanatorily relevant to Q, then there are counter-examples to (ET).

The fourth and final point is substantive:

4. There are P, Q, and C such that P grounds Q only if C but C is not explanatorily relevant to Q.

What the foregoing makes clear is that the question of whether a completer interpretation of a *prima facie* counter-example to (ET) will always be viable is bound up with the question of whether the conditions necessary for a ground to ground what it grounds are always apt to be added to the ground, i.e. are always explanatorily relevant to what the ground grounds.

To appreciate the motivation for (4), consider a general point James Woodward makes about explanatory relevance:

> To say that certain information is "part" of an explanation or contributes to its explanatory import is to say that this information contributes to the understanding provided by the explanation. This in turn imposes an epistemic constraint on what information can be part of an explanation and can contribute to its explanatory import: such information must be epistemically accessible to those who use the explanation.[9]

Woodward argues from the claim that parts of an explanation—i.e. explanatorily relevant conditions—must contribute to our understanding of our explanandum to the claim that there are epistemic accessibility constraints on explanatory relevance. Perhaps this is correct. But I want to consider two constraints on explanatory relevance that are more modest than epistemic accessibility constraints.

These are non-vacuity and naturalness constraints:

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[9] (Woodward 2003), pg 179.

> C is explanatorily relevant to Q only if C is not vacuous in a way that renders it unable to contribute to understanding why Q obtains.
>
> The Cs are explanatorily relevant to Q only if the set of the Cs is not unnatural in a way that renders it unable to contribute to understanding why Q obtains.

Neither vacuity nor naturalness admits of simple definition. But there are clear examples of both, and we seem largely to agree on how to apply the notions. *Virtus dormitiva* explanations illustrate vacuity. The explanation for why opium puts you to sleep should not contain the condition that it has the capacity to put you to sleep. Why? Precisely because this condition is vacuous given our explanandum. There are physical conditions that determine the fluctuations in the stock market. But they do not compose an explanation of the fluctuations in the stock market. Why? Precisely because they are so wildly heterogeneous that the set of them is too unnatural to provide us with any understanding of why the stock market behaves as it does.

I've illustrated vacuity and unnaturalness using examples drawn from the domain of causal explanation. But they have application in the domain of grounding explanation as well. Consider the second *prima facie* counter-example discussed above. You are justified in believing that there is a red light ahead in virtue of having a visual experience as of a red light ahead. Suppose we supplement the condition that you have the visual experience so that the result is a complex condition that suffices for your having the justification. What would this complex condition look like? I propose that either it will be unnatural or contain a vacuous condition.

We might start by adding the condition that you not know that you have taken a pill that makes green things look red. But if we go down that path, then we also have to add conditions such as the condition that you not think the lighting conditions are off, that you not think that you are hallucinating, that you not think that there is an invisible color inverting film between you and the light, etc. The set of conditions will be wildly heterogeneous.

Alternatively, we might note that though having a visual experience as of a red light ahead does not suffice for having justification for believing there is a red light ahead it does suffice for having *prima facie* justification for believing that there is a red light ahead. If this *prima facie* justification is undefeated, then you do have justification for believing that there is a red light ahead. Suppose, then, we just add to the condition that you have the visual experience that the *prima facie* justification for which it suffices is undefeated. This gives us a complex condition that suffices for your having the justification. But, it seems to me, it suffers from vacuity. All it tells us is that your visual experience justifies you in believing that there is a red light ahead unless for some reason or other it doesn't, without providing us with any illuminating conception of the range of defeaters.

The foregoing gives us some reason to think that (4) is true. But if (4) is true, then it is possible for Q to be grounded in P even though P does not entail Q. That is, (ET) is false.

4. An Epistemological Application

As Brian Weatherson has pointed out, the view that knowledge is justified true belief is systematic and accommodates many of our intuitions about knowledge.[10] Unfortunately it does not accommodate all of them: it does not accommodate our intuitions about Gettier cases. What should we do? What many epistemologists have done is accepted the Gettier intuitions and rejected the JTB analysis. Maybe, just maybe, Weatherson urges, the right thing to do is accept the JTB analysis and reject the Gettier intuitions. Perhaps the theoretical virtues of the JTB analysis trump the forcefulness of the Gettier intuitions.

Rejecting (ET) provides us with another option: we can accept both the JTB analysis and the Gettier intuitions. To do so, however, we have to recognize that they target different things. The Gettier intuitions target the necessary and sufficient conditions for knowledge. The JTB analysis is often presented as targeting the same

[10] See (Weatherson 2003).

thing. But I think it is best understood as targeting something else, namely the grounds of knowledge. That is, the JTB analysis should be understood as saying "If S knows that p, then the fact that S knows that p *is grounded in* the facts that p is true, S believes p, and S's belief is justified," not "S knows that p *if, and only if*, p is true, S believes p, and S's belief is justified."

Of course, this distinction wouldn't matter if (ET) were true. But it does seem to matter. And there is a very natural way to understand why: Gettier cases illustrate the truth of (4). Consider an example. Suppose Henry is driving along a normal highway and sees a red barn. He forms the belief that there is a red barn, and this belief amounts to knowledge. Why? That is, what is the ground of the fact that Henry knows that there is a red barn? Plausibly the ground is this: there is a red barn, Henry believes there is a red barn, and Henry's belief is justified by his visual experience of the red barn. Let P be all these conditions together. Let Q be the fact that Henry knows that there is a red barn. P does not entail Q. The reason why is that had Henry been driving in fake barn county and had P obtained, then Q wouldn't have obtained.[11] And this is just one out of a wildly heterogeneous set of ways for P to be true and Q false.[12] Because of this wild heterogeneity any condition C that rules out all of them will likely be too unnatural to be added to P as a partial ground of Q. Further, letting C be the condition that Henry is not in a Gettier case doesn't work either because then C is vacuous in just the way that a no defeaters condition is vacuous. So, on either of these ways of thinking about C, C is a condition such that P grounds Q only if C, and that is not explanatorily relevant to Q. And, given what I argued above, this suggests: the fact that Henry knows is grounded in the facts that Henry has a justified true belief, even though the fact that Henry has a justified true belief does not entail, i.e. suffice for, the fact that Henry knows.

Bibliography

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[11] For fake barn county see (Goldman 1976).

[12] Some philosophers have suggested that Gettier cases are not so heterogeneous: see (Lycan 2006). But they do so by rejecting fake barn cases and all the variations on them. I find fake barn cases as compelling as any other Gettier cases.

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