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GROUNDING: TOWARD A THEORY OF THE *IN-VIRTUE-OF* RELATION*

The phrase 'in virtue of' is ubiquitous in philosophy. Nearly as pervasive are the protestations that it is poorly understood and in need of clarification.[1] Far less common are sustained attempts to elucidate this phrase and its philosophical significance.[2]

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[1] In this connection, see Chris Daly, "Scepticism about Grounding," in Fabrice Correia and Benjamin Schnieder, eds., *Metaphysical Grounding: Understanding the Structure of Reality* (New York: Cambridge, 2012), pp. 81–100; Alex Oliver, "The Metaphysics of Properties," *Mind*, CV, 417 (January 1996): 1–80, especially sections 17 and 24; and Thomas Hofweber, "Ambitious, Yet Modest, Metaphysics," in David Chalmers, David Manley, and Ryan Wasserman, eds., *Metametaphysics: New Essays on the Foundations of Ontology* (Cambridge: MIT, 2009), pp. 260–89.

[2] Important exceptions include Kit Fine, "The Question of Realism," *Philosophers' Imprint*, I, 2 (June 2001): 1–30; Fine, "Guide to Ground," in Correia and Schnieder, eds., *op. cit.*, pp. 37–80; Correia, *Existential Dependence and Cognate Notions* (Munich, Germany: Philosophia Verlag, 2005); Gideon Rosen, "Metaphysical Dependence: Grounding and Reduction," in Bob Hale and Aviv Hoffman, eds., *Modality: Metaphysics, Logic, and Epistemology* (New York: Oxford, 2010), pp. 109–35; and Jonathan Schaffer, "On What Grounds What," in Chalmers, Manley, and Wasserman, eds., *op. cit.*, pp. 347–83.

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I propose that it expresses a primitive, noncausal relation of determination, which I call *grounding*. Although my understanding of grounding fits well with many of the most interesting and important uses of the phrase 'in virtue of' (and related locutions), my account is not purely descriptive; my claim is that we should regiment our use of the phrase to achieve the best theoretical result.

My specific aim is to argue that we must recognize grounding as a distinct relation of determination, and to say with as much precision as possible what grounding is and how the concept can be useful in philosophy. One of my assumptions is that there are certain nonfundamental properties, properties that are never instantiated brutely, but always because some other properties are. It is in making sense of the force of this 'because' that grounding earns its keep. I will assume that there are normative properties, semantic properties, aesthetic properties, determinables, and dispositions, and that none of these is instantiated brutely. The notion of grounding, it should be noted, does not itself depend on assumptions about these properties in particular. My argument could in principle be made in terms of other properties, provided that there are noncausal explanations of why those properties are instantiated. But these are the main cases that I will use to motivate the particular view of grounding that I develop here.

I take grounding to be a relation between facts, where a fact is something's or some things' having properties or standing in relations. Facts so understood are not true propositions, but the obtaining states of affairs that are the "truthmakers" of true propositions. I will use the notation '[p]' to stand for 'the fact that p', '[Fa]' to stand for 'the fact that a is F', and so forth. Facts are particulars, and are individuated by their worldly constituents (objects, properties, relations) and the manner of their combination. As such, expressions of facts are referentially transparent. If the sweater is the jumper, and the property of being red is the property of having reflectance property P, then [the sweater is red] is the same fact as [the jumper has P]. I will often refer to facts as 'the fact that…', as in 'the fact that a is F grounds the fact that a is G'. But I take it that 'a's being F' also picks out the fact that a is F, though not under the guise of fact. So I consider expressions like 'a's being F grounds a's being G' to be equivalent to the correlative formulations explicitly in terms of facts. (I do not regard facts as fundamental entities, but this is inessential to my theory of grounding.[3])

[3] If no fact is fundamental, does that entail that every fact has a ground? No, because I take facts to be *compositionally* nonfundamental. That is to say, facts are not among the basic ontological building blocks (but are composed of particulars

My view is that '*a is F* in virtue of *being G*' is to be understood as true just in case there are facts, [*Fa*] and [*Ga*], such that [*Ga*] grounds [*Fa*]. So grounding is a relation between facts. This is sometimes called the *predicational* view of grounding, because it construes 'grounds' as a relational predicate where the relata are facts.[4] I also take the natures of properties to fix what grounding relations hold. That is, the nature of a given fact—in particular, what properties (or relations) it involves—is what renders it suitable, or unsuitable, to stand in grounding relations with various other facts. I will discuss this in detail below. But before saying more about what grounding is, something must be said about why it is necessary to countenance grounding.

I. THE ARGUMENT FOR GROUNDING

In virtue of the fact that I see you, I have a reason to believe that you stand before me. In virtue of being spherical, this ball is disposed to roll down inclined planes. In virtue of certain social, psychological, and causal facts about English speakers, the sentence 'grass is green' expresses in English the fact that grass is green. Each case presents an explanation. In the first case, my possession of a reason is explained by appeal to my experiences. In the second, a disposition of the ball is explained by appeal to one of its categorical properties. In the third, a semantic fact is explained by appeal to certain social, psychological, and causal-historical facts.

Now, the explanations above are not causal explanations. The facts involved in them do not stand in causal relations with one another. My visual experience does not cause me to have a reason for belief. The ball's sphericity does not cause it to have the disposition to roll. And the fact that English speakers have certain beliefs, conform to certain conventions, and have a certain causal history vis-à-vis grass does not cause 'grass is green' to mean what it does. For one thing, in each case the relation between the paired facts seems too intimate to be a causal relation; the facts are not wholly distinct in the way causation apparently requires its relata to be.

If we recognize these cases as genuine explanations, and we agree that explanations require nonexplanatory relations underlying their correctness, then we are committed to recognizing a noncausal relation

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and properties). I do not take composites to be grounded in their parts. Grounding, then, is not the only relation whereby the fundamental gives rise to the nonfundamental. I discuss fundamentality further in section VI.

[4] For more on the predicational view of grounding and alternatives, see Fine, "Guide to Ground."

at work in these explanations. Like causation, the relation will be one of *determination*, roughly, of *making so*, of *bringing about*, or of *being responsible for*. Here is the argument made explicit:

(1) One fact explains another only if the one plays a role in determining the other.
(2) There are explanations in which the explaining fact plays no causal role with respect to the explained fact.
∴ (3) There is a noncausal relation of determination.

The first premise expresses the realist stance toward explanation that I assume here.[5] The second is supported by examples like those given above (and others to be given below). The relevant noncausal relation, of course, is what I call *grounding*.

Now, the conclusion of the above argument is that there is at least one noncausal relation of determination. Perhaps there is more than one, but I believe that in the cases I discuss, there is a single relation of determination at work. We can do a little better than to regard this as a plausible default assumption (though I think it is one). If all the relevant examples conform to the theory set forth, that is good prima facie evidence that there is a single relation at work. (At the very least, the theory describes an important family of relations.) Now, Kit Fine, for example, holds that where the ball is red in virtue of being maroon, we have *metaphysical* determination, but where the act is wrong in virtue of being a lie, we have *normative* determination.[6] On my view, there is no compelling reason to think of these as different kinds of determination, as opposed to importantly different cases involving the same sort of determination. In both cases, the fact that one property is instantiated obtains in virtue of the fact that another property is instantiated. It just happens that one case involves a normative property. I see no reason as yet to think that the *way* normative properties are grounded in

[5] For defenses of the realist approach to explanation, the approach that requires determination relations to underlie explanations, see Jaegwon Kim, *Supervenience and Mind: Selected Philosophical Essays* (New York: Cambridge, 1993), p. xii; Kim, "Explanatory Realism, Causal Realism, and Explanatory Exclusion," *Midwest Studies in Philosophy*, XII, 1 (September 1988): 225–39; and David-Hillel Ruben, *Explaining Explanation* (New York: Routledge, 1990).

[6] Fine, "Guide to Ground." Elsewhere, Fine explains the difference as follows: in the metaphysical case, the connection holds as a matter of the essences of the relata, but not so in the normative case. See his "The Varieties of Necessity," in Tamar Szabó Gendler and John Hawthorne, eds., *Conceivability and Possibility* (New York: Oxford, 2002), pp. 253–81. So it appears he would agree with me that for a connection to count as a grounding relation, it must be part of the essences of the relata that it should hold (see section III below), but would deny that it is any part of the essences of, say, pain and reasons for aversion that they should be so connected.

other properties differs from the way, say, determinables are grounded in determinates.

Suppose, for a moment, that in the various purported cases of grounding there are different specific relations at work—one in the case of determinables, one in the normative case, and so forth. Even so, the theory presented here would characterize the genus to which these species belong. It may be formally open, still, that the similarities among the cases are pure coincidence, that they are not species of a genus at all. But I think this view is much less plausible than it at first appears. Consider: each case involves noncausal explanation; each appears metaphysically necessary; each involves the instantiation of one property making another property to be instantiated; the relevant properties in each case seem to be essentially connected with one another. Such pervasive similarity among such diverse subject matters cries out for explanation. I propose that what accounts for the similarity is simply that there is a single relation at work in each case.

Even the view that there is only a generic similarity, that there is a different species of noncausal determination at work in each case, strikes me as under-motivated. What differentiates the species? If it is only that one concerns normative properties, another determinables, still another dispositions, this does not yet give us a reason to think that *how the determination works* differs in each case, simply because it relates different kinds of fact. So I take the burden of proof to be on those who think there are different relations at work to show why, to show in what way the determination differs in the different cases. I will proceed, then, on the assumption that there is just one noncausal determination relation at work in the relevant examples.[7]

What are the relevant examples? They fall into a number of groups. *The Normative.* Some acts are wrong in virtue of being lies. Agents have reasons (practical and epistemic) in virtue of experiences. Her pain grounds a reason to stop running. His proprioceptive experience grounds a reason to believe that he is upside down. *The Dispositional.* The ball is disposed to roll in virtue of being spherical. The wire has the power to conduct electricity in virtue of being copper. *The Determinable.* The shirt is red in virtue of being maroon. The bar has mass in virtue of having a mass of 20 kg. *The Semantic.* 'Grass is green' means in English that grass is green in virtue of the

[7] For other arguments that there is just one grounding relation, see Schaffer, *op. cit.*, pp. 376–77; and Karen Bennett, "Construction Area (No Hard Hat Required)," *Philosophical Studies*, CLIV, 1 (May 2011): 79–104.

psychological states, linguistic conventions, and causal history of certain speakers. *The Aesthetic.* The vase is beautiful in virtue of physical properties such as its shape, color, and texture. *The Mathematical.* 17 can play a certain role in Gödel numbering in virtue of being prime. 3 is the successor of the successor of 1 in virtue of the fact that it is the successor of 2 and 2 is the successor of 1. Others appeal to further examples as well, many of which (such as logical examples and truthmaking) I do not regard as genuine examples of grounding.[8] (Some of my reasons for denying those cases will emerge below in the discussion of reduction.) But these examples will suffice to get us started.

II. DETERMINATION

This section lays out the general notion of *determination*, of which I take grounding to be an important kind. Another important, though very different, kind of determination is of course causation. The features discussed here are shared by grounding and causation. (I begin to differentiate grounding from causation in the next section.)

(i) For one thing to determine another is for the first to *bring about* or *be responsible for* the second. Examples include something's high temperature bringing about its combustion, or something's physical properties being responsible for its beauty. I doubt that the notion of determination can be defined; I assume here that it is a primitive notion (but one we intuitively understand quite well, particularly in cases of causation).[9] In another use 'determine' means something like *fix a unique value.* A function, for example, can be said to determine values given arguments. But clearly negation does not *bring about* the truth-value *false* when operating on a true proposition. These two senses of 'determine' must not be confused.

(ii) Determination is closely related to explanation. One important way to explain something is to answer the question of why it occurs or obtains. One way to answer the why question will be to cite what determines the fact to be explained. This is obvious in the case of causal explanation, where an event's occurring may be

[8] I discuss the issue of which are the genuine cases of grounding, and why, in "A Clarification and Defense of the Notion of Grounding," in Correia and Schnieder, eds., *op. cit.*, pp. 101–21.

[9] It does not follow from the claim that determination is primitive that the species of determination (grounding, causation) are primitive. But my conjecture is that they are; they can be usefully characterized, but never defined. For that reason, my approach here will be to characterize grounding with no attempt at definition. Even if this conjecture is mistaken, the arguments here can be taken to constrain any adequate definition of grounding.

explained by appeal to its causes.[10] It may even be the case that for a certain kind of explanation—the kind that is factive, referentially transparent, and interest-independent—a relation of determination is necessary and sufficient for an explanation.[11] Even so, determination is not explanation. A bare explanatory concept such as *because* is sufficient to express an explanatory connection between facts (or other candidate explananda and explanantia). But the bare explanatory concept will differ from any relation of determination at least in being less specific. Familiarly, 'because' can be used when no causal relation underlies the explanation (for example, 'this is wrong because it is unfair'). By the same token, 'because' can be used by someone who does not have the concept of causation at all. To appreciate that an explanation obtains, one need not know the specific mechanism whereby it obtains.

(iii) Determination is a *worldly*, as opposed to *conceptual*, affair. Whether two things stand in a relation of determination does not depend on how we conceive them. For example, the fact that his ingestion of the sleeping pill caused him to fall asleep in no way depends on how we conceive of the case, or whether we think of it at all. Similarly, if lying really is a wrong-making property, then the fact that her act was a lie (with no other morally relevant features) made her act wrong, no matter how we regard lying or, for that matter, wrongmaking. One might worry that it is simply false that 'his taking a blue pill caused him to fall asleep', even if the sleeping pill was blue. But note that this does not mean the same thing as 'the pill caused him to fall asleep in virtue of being blue'. The latter would, in any normal case, be false. But the former might well be true, if misleading or infelicitous. (If determination is worldly, and one way to explain something is to say what determined it, then there is at least one kind of explanation that is worldly as well.)

(iv) Determination is *irreflexive*. Metaphysically speaking, there is nothing properly called self-determination. Putative cases involve determination between different facts, events, parts, or temporal stages

[10] Cf. David Lewis, "Causal Explanation," in *Philosophical Papers, Volume II* (New York: Oxford, 1986), pp. 214–40.

[11] It is of course controversial whether or not there is a kind of explanation that is referentially transparent and interest-independent. In calling explanation referentially transparent, I mean that if one thing explains another, then it does so independently of how it is conceived or picked out. For example, if *c* causally explains *e*, then this is so whether we call *c* 'the impact', 'the accident', or 'Gordon's mistake'. This does not entail that all ways of referring to a thing do an equally good job of making clear why it explains what it does (or is explained by what it is). I defend this understanding of explanation in "Grounding and Property Identity," unpublished manuscript.

of or about a single particular. I move myself, to be sure, but only by events in one part of me causing events in another.

(v) Determination is *asymmetric*. There can be no pair such that each is a determinant of the other. To be sure, there are those who think of causation as a reciprocal matter consisting in the mutual manifestation of things' powers to interact with one another.[12] It is a mistake, they say, to think that when salt is immersed in water and dissolves, the water is the agent and the salt is the patient. There is a single interaction—call it *dissolution-saturation*—that draws equally on the powers of both partners. If this is right, it seems to me that mutual manifestation is not a determination relation. It seems to me that this view precisely *denies* that water makes salt dissolve or that salt makes water saturated. Causation, understood as asymmetrical, may still belong in this picture, however. But instead of being a relation between the water and the salt, it is a relation between the event of their coming together and the advent of their mutual interaction.

(vi) Determination is a *singular* relation in the sense that it is a relation between particulars (such as events, objects, or facts). Causation, for example, is the relation between *your* flipping the switch and *this light's* coming on. It is not a relation between switch flipping and illumination in general. Singular relations of determination might nevertheless depend on relations between universals (laws of nature, for example). But the determination relations themselves would still be relations between particular instances of those universals. (If properties are tropes, then of course determination can hold between tropes compatibly with singularism.) A universal neither brings about nor is responsible for any other universal. Universals themselves, considered apart from their instantiations, are ontically on a par. Although the fact that a given thing is maroon might explain why it is red, maroonness does not explain why there is a property of being red or why that property is as it is. I take this point to generalize to all properties.

(vii) Determination is importantly different from dependence. Determination can occur without dependence, as illustrated by cases of overdetermination. If each of us simultaneously drops an ice cube into the full glass, then its overflowing does not depend on either of our actions, though each counts as having brought it about.[13] There

[12] This conception is due to C. B. Martin. A nice statement of it is in John Heil, "Causing," in Jonathan Jacobs, ed., *Putting Powers to Work: Causal Powers in Contemporary Metaphysics* (New York: Oxford, forthcoming).

[13] *Collectivists* about apparent cases of overdetermination will argue that in such cases, we have a single complex cause rather than two independent ones. If so, then

may of course be interesting relations we can chart between the notions of determination and dependence. But they are not so straightforwardly related as some have thought.[14]

(viii) Determination is *factive*. If one thing determines another, then both in fact obtain or occur. If his drunken confession caused the awkward silence, then he in fact drunkenly confessed, and there in fact followed an awkward silence.

(ix) Determination is *nonmonotonic* in the sense that it does not follow from *x*'s determining *y* that *x* and *z* together determine *y* (even for some *z* assumed compossible with *x* and *y*).[15] Suppose my being tall causes me to hit my head. It does not follow—and ordinarily would not be true—that being tall and having black hair cause me to hit my head. Having black hair would, in any normal case, be causally irrelevant to my hitting my head. (I discuss this idea further in section IV.)

III. ESSENTIAL CONNECTION AND THE NATURES OF PROPERTIES

There is an important link between grounding and the natures of properties. I take grounding to be a singular relation between facts, but it seems to me that grounding relations *depend on* and *follow from* the natures of the properties involved in these facts. For example, the fact that my shirt is maroon grounds the fact that it is red. It is purely incidental to this relation which particular has the properties in question. Nothing peculiar to my shirt influences the way in which these properties manifest their natures. Anything maroon is red, and indeed, anything maroon is red *in virtue of* being maroon. So it seems that it is the natures of these properties that are responsible for the grounding relation's obtaining. That is, the grounding relation between [the shirt is maroon] and [the shirt is red] seems to follow from, and just from, the natures of maroonness and redness.

In this way, grounding is sensitive to the natures of its relata. (So grounding is diametrically opposed to causation as Humeans understand it.) It is a necessary condition of one fact's grounding another

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dependence and (causal) determination once more go hand in hand. The obvious problem with collectivism is that intrinsic duplicates of parts of presumptively overdetermining causes could occur alone as causes (in the same nomic environment). For deeper discussion, see Schaffer, "Overdetermining Causes," *Philosophical Studies*, CXIV, 1–2 (May 2003): 23–45.

[14] Jaegwon Kim, for example, once suggested that determination is the converse of dependence. See his "Concepts of Supervenience," *Philosophy and Phenomenological Research*, XLV, 2 (December 1984): 153–76.

[15] This is an extension of the meaning of 'nonmonotonic' as used to describe formal systems, but one that I take to be clear enough.

that the natures of the properties involved be related to one another in some significant way. We can call this relation *essential connectedness*, a label I deliberately leave unspecific.[16] Without saying precisely what essential connectedness amounts to, it is clear that some pairs of properties fail to be essentially connected in the required way, so that facts involving them cannot possibly stand in relations of grounding with one another. It is metaphysically impossible that something be red in virtue of being loud, or morally wrong in virtue of being pointy, or prime in virtue of having a mass of 10 kg. The properties in these pairs are simply too disparate.

It might seem, then, that we can use the notion of essential connectedness to explain what grounds what. The following principle is initially attractive: the fact that any given grounding relation holds is itself grounded in the fact that the properties in one fact are essentially connected to the properties in the other. But this principle faces a number of difficulties. Start with some grounding fact:

(4) [*x* is maroon] grounds [*x* is red].

The principle requires that this fact be grounded in the fact that the properties in each fact are essentially connected. So we have:

(5) [EC(maroonness, redness)] grounds [[*x* is maroon] grounds [*x* is red]].

But now the principle requires that (5) be grounded in an essential-connection fact, one connecting the properties in the grounding fact (in this case, itself about essential connection) with those in the grounded fact (in this case, the first-order grounding fact). We immediately face the threat of regress and a proliferation of iterated facts about essential connection. Note that it would not do to say that the essential connection of maroonness to redness grounds the very fact that such essential connection grounds the first-order grounding fact. That is, it would not do to say that

(6) [EC(maroonness, redness)]

is the ground of

(5) [EC(maroonness, redness)] grounds [[*x* is maroon] grounds [*x* is red]].

[16] One reason to be unspecific about essential connectedness is that the way in which properties are essentially connected may differ in different cases. Determinables and their determinates, for example, might be essentially connected in a way different from the way, say, that wrongness and causing pain are essentially connected. It is also worth noting a broader notion of essential connectedness that need not involve grounding at all. For example, I deny that something's being square is grounded, even in part, in its being quadrilateral (for reasons I give in section v). But there is a perfectly good sense in which these two properties are essentially connected.

For then we would have a fact grounding its own ability to ground further facts. Even if this is not ultimately a violation of irreflexivity, it cannot do the work we set out to accomplish.[17] The principle with which we began was motivated by the idea that we can always *explain* why a given grounding fact holds by appeal to some new fact. But if a fact grounds any of its own grounding abilities, then at least some grounding relations must go unexplained. The problem is clearer in the case of the first-order grounding fact. Suppose we said that [*x* is maroon] grounds [*x* is red] just in virtue of the fact that *x* is maroon. Plainly this would fail to explain *why* [*x* is maroon] grounds [*x* is red]. I see no reason why this would differ when the appeal is to an essential-connection fact.

My view is that we should not hold out for an explanation of every grounding fact, and in particular, we should not expect every grounding fact to be *grounded*, even in a fact about essential connection. So then how should we characterize the relation between grounding and essential connection? The fact that some grounding facts are not *explained*, properly speaking, does not entail that there is no interesting metaphysical connection between certain grounding facts and the essential connections between the properties those facts concern. If we take care to distinguish between (a) a fact's being grounded by something and (b) a fact's being a part of, or manifestation of, the essence of that thing, then we can characterize essential connection as follows: *It lies in the nature of* certain properties that their instances should stand in grounding relations.[18] For example, when a given instance of maroonness grounds a coincident instance of redness, this fact manifests the natures of the relevant properties. It is part of their essence to behave in this way when instantiated. This is not to give an explanation of *why* the relevant facts stand in a grounding relation, and indeed there may not be an explanation, properly so called. The point of this characterization is simply to chart an important relation between the essences of properties and the grounding relations that obtain among their instances.[19]

This may sound abstruse, but the idea is simple and should be familiar. Compare saying that it lies in the nature of being square

[17] How could this fail to be a violation of irreflexivity? (5) and (6) are not the same fact. But plausibly, irreflexivity should be understood so that a fact cannot be a constituent in any fact it grounds.

[18] For a discussion of the notion of *lying in the nature of something*, see Fine, "Ontological Dependence," *Proceedings of the Aristotelian Society*, XCV (1995): 269–90. Fine treats this notion as primitive.

[19] Compare Fine: "ground-theoretic connections will be inextricably involved in the nature of certain things" ("Guide to Ground," p. 77).

to be equilateral. There is a straightforward sense in which this is true: being equilateral is part of (but does not exhaust) the essence of being square. Still, we do not think we can *explain* why a given thing is equilateral by appeal to its being square. (At best, this gets things backwards, since being square is defined partly in terms of being equilateral.) Rather, being equilateral is partly constitutive of being square. Similarly, part of what it is to be maroon is to ground coincident instances of redness; such is the nature of maroonness. Nothing could count as an instance of maroonness if it did not do this. So we find an intimate link between relations of grounding and the natures of properties. The essence of any given property will include at least its suitability (or unsuitability) to stand in certain grounding relations.[20]

IV. PRINCIPLES OF GROUNDING

This section sets out some principles governing the behavior of grounding as I understand it, and also important background notions like that of a fact. I will use a subscripted arrow to symbolize grounding: '$\rightarrow_g$'. So '$[p] \rightarrow_g [q]$' reads "the fact that p grounds the fact that q." Because a plurality of facts can work in tandem to ground a further fact, '$\rightarrow_g$' can be plural on the left-hand side. I will sometimes write the symbol for a set on the left-hand side of '$\rightarrow_g$'. The set itself is not a ground, but will stand for a set of facts that jointly ground the further fact in question. If Γ is the set $\{[p], [q]\}$, then '$\Gamma \rightarrow_g [r]$' and '$[p], [q] \rightarrow_g [r]$' are two ways of writing the same thing.

IV.1. The Worldly Conception of Facts. It is worth repeating something I said early on, to wit, that I take grounding to be a relation between facts, where facts are things' having properties and standing in relations. This is the *worldly conception of facts*, according to which facts are individuated by their worldly constituents (objects, properties, relations) and the manner in which these are combined (instantiation by the objects of the properties and relations).[21] On this understanding, the conceptual vestments of facts do not enter into their identity conditions. If water is the same thing as H_2O, and being hot is the same property as having a mean molecular kinetic energy greater than n, then [the water is hot] is the same fact as [the H_2O has MMKE > n], conceptual differences notwithstanding. In general, $[p]$ and $[q]$ are the same fact just in case $[p]$ consists in

[20] Partly for this reason, I believe grounding to be indispensible for understanding the identity conditions of properties, as I argue in "Grounding and Property Identity."

[21] If there are genuine properties of properties, then there may be facts that consist in the having of a higher-order property by a lower-order one, such as the fact that yellow is a color or the fact that this yellow is bright.

the instantiation of the same properties and relations by the same things in the same order as does $[q]$. A full formal statement of this idea would be unwieldy, but the idea comes across straightforwardly in simple cases:

(7) $[F(x_1, \ldots, x_n)] = [G(y_1, \ldots, y_n)]$ if and only if $x_1 = y_1, \ldots, x_n = y_n$, and the property of being F = the property of being G.

So we have a single fact if and only if we have the same properties (or relations) being instantiated by the same thing or things (in the same order). On a conceptual view of facts, a further requirement of fact identity is that the relevant worldly items be presented under the same concepts.

The worldly view strikes me as incumbent on us if we regard grounding relations as revealing the concept-independent structure of the world. Just as a certain pill may cause drowsiness whether we conceive it as a blue pill, a sleep aid, or are utterly ignorant of its having been ingested, similarly, how we conceive a fact does not in any way influence its grounding role. So the worldly conception of facts is part and parcel of the worldly conception of grounding. (I discuss the conceptual view further in the next section.)

IV.2. Generality and Necessity. Grounding relations, as I said, manifest the natures of the properties involved in them. It is of the essence of maroonness and redness that instances of the former ground instances of the latter, and what particulars instantiate them will in no way influence how their essences manifest themselves. It is implicit in this idea, first, that grounding relations are *general*, in the sense that what a property enables a thing to ground does not differ among the various instances of that property, and second, that grounding relations are *necessary*, in the sense that what a property enables a thing to ground does not differ across possible worlds. This entails, for example, that

(8) If $[Fa] \rightarrow_g [Ga]$, then $\Box(\forall x)(Fx \supset Gx)$.[22]

It also entails the stronger

(8*) If $[Fa] \rightarrow_g [Ga]$, then $\Box(\forall x)(Fx \supset (Gx \,\&\, ([Fx] \rightarrow_g [Gx])))$.

For example, the fact that my shirt's being maroon grounds its being red not only entails that necessarily, everything maroon is red, but entails also that necessarily, everything that is maroon is not only red but red *in virtue of being maroon.*

[22] Generality and necessity also apply to relational facts, higher-order facts, and otherwise more complex facts, but I keep to simpler cases for brevity and ease.

A more general way to put the point that grounds necessitate what they ground is what Gideon Rosen calls *the entailment principle*:

(9) If $\Gamma \rightarrow_{g} [q]$, then $\Box(\Lambda(\Gamma) \supset q)$.

Here, $\Lambda(\Gamma)$ is the conjunction of all the propositions that correspond to the facts in Γ. So (9) says that if the facts in Γ jointly ground $[q]$, then the proposition stating that they all obtain entails q. I join Rosen in upholding this principle.

IV.3. Fully Grounding versus Partly Grounding. If (9) is correct, then we should claim that one fact grounds another, simpliciter, only when the first is fully metaphysically sufficient for the second. Is grounding, then, of any use to someone who wants to recognize an insufficient noncausal contribution one fact might make toward grounding another? For example, suppose that being made of concrete confers the power to withstand certain pressures, but only contingently. It would be nice if the theory of grounding could shed light on what this *conferral* amounts to (that is, on what the relation is between dispositions and their bases). But if (9) is correct, then either it is a necessary truth that being made of concrete grounds the power to withstand certain pressures, or it is false that being made of concrete grounds that power.

The reader will no doubt foresee the solution, which is to distinguish between grounding simpliciter and *partly grounding*. Partly grounding can be defined straightforwardly in terms of grounding simpliciter (which we can also call *fully grounding* for the sake of clarity). One fact (or set of facts) partly grounds another if the one is a proper part of a (full) ground of the other:

(10) $\Delta \dashrightarrow_{g} [p] \quad =_{df}$ There is a set of facts, Γ, such that
(i) $\Delta \subset \Gamma$, and
(ii) $\Gamma \rightarrow_{g} [p]$.

So then to say that $[q]$ obtains *partly in virtue of* $[p]$ is to say that $[p]$ partly grounds $[q]$. Partly grounding does not obey an entailment principle on a par with (9), and it is possible for a would-be partial ground to obtain without the fact that it would ground were the other required facts to obtain. It is still the case, however, that what a property suits a thing to partly ground—what it insures that a thing will ground in the presence of various other facts—does not vary among instances or across worlds.

Returning to our example, suppose that being made of concrete confers a certain compressive strength only in nomically cooperative worlds. Then there are things made of concrete (none of which are actual) that crack under less intense pressures than their actual

counterparts. But we might still say that the fact that something is concrete and the fact that it inhabits a world with certain laws (fully) grounds—and thereby necessitates—the fact that it has a certain compressive strength.

This is just an example, and officially I make no claim here about whether the fact that something has a certain property partly grounds the fact that it has a certain causal power, or whether laws are required for a full ground of that fact (let alone how laws could manage to contribute to grounding things' causal powers). Nevertheless, I consider it a virtue of the theory that it can accommodate conferral without necessitation. It is also consistent with a mixed theory of properties on which certain properties confer essentially some of their associated powers, and certain properties confer only contingently some of their associated powers. But none of these theories of the relation between properties and powers (contingentist, necessitarian, or mixed) is built into the theory of grounding presented here.

IV.4. Nonmonotonicity and Minimality. Grounding, like all determination, is nonmonotonic, which is to say that the result of adding an arbitrary component to a ground of $[p]$ is not guaranteed to be a ground of $[p]$:

(11) $\Gamma \rightarrow_g [p]$ does not entail that $[q]$, $\Gamma \rightarrow_g [p]$ (for any arbitrary q).

Should we also hold the stronger principle that adding an arbitrary element to a full ground never yields another full ground? I believe we should. Intuitively, for something to be contained in a ground of some fact, it must actually do some work with respect to making that fact obtain. That is why, for example, the fact that the shirt is both maroon *and cotton* does not ground the fact that it is red; the fact that it is cotton does no work with respect to making it red. So it appears that a ground of some fact must be *minimal* in the sense of containing only elements that jointly suffice to bring it about that the fact in question obtains:

(12) $\Gamma \rightarrow_g [q]$ entails that there is no Δ such that $\Delta \subset \Gamma$ and $\Delta \rightarrow_g [q]$.

Put another way, *minimality* states that something is a ground of a given fact only if nothing can be subtracted from it without its thereby losing the ability to ground the fact in question. It seems to me that grounding must obey some such principle (though in a moment, I will note some difficulties arising from minimality). Minimality insures that arbitrary elements will not count even as partial grounds of grounded facts, even by courtesy. It also provides that adding apparently nonarbitrary elements to grounds

does not yield a new ground. For example, it debars collections of sufficient grounds from counting as grounds in their own right: if $[p] \rightarrow_g [r]$ and $[q] \rightarrow_g [r]$, then by (12) it is not the case that $[p]$, $[q] \rightarrow_g [r]$. This is a welcome result. Suppose an act is wrong in virtue of causing pain and in virtue of being unfair, and that each of these features of the act is sufficient by itself to ground wrongness. We can say then that the wrongness has two grounds. But presumably we should not say that it has three grounds, the third being the fact that it *both* causes pain and is unfair. Counting the combination of facts as making a contribution beyond their individual contributions would reckon one too many singular relations of grounding.[23]

Minimality, then, is at least initially quite plausible. But here is a potentially troubling case for it. Suppose that [there are infinitely many electrons] is grounded in [e_1 exists], [e_2 exists], … In this case, it seems that we could remove any (finite) number of the grounding facts and still have a ground for [there are infinitely many electrons].[24] If so, we have a counterexample to minimality as formulated in (12). Now, one might doubt that we have a genuine case of grounding here. If one denies that there are existential facts, for example, then one will dismiss the example. (Depending on what one says about the relation between grounding and truthmaking, one might reject this as a case of grounding and still regard the proposition that there are infinitely many electrons as having a truthmaker, if not a minimal one.)

There are good reasons to deny existential facts on the worldly conception of facts. On that conception, the (putative) fact that something exists seems quite mysterious—particularly if it is to be something other than just the thing in question. First of all, existing does not seem to be a genuine property. (It certainly does not appear to be an aspect present in objects in anything like the way, say, their shapes or colors are present.[25]) So if 'the fact that *x* exists' indeed expresses a fact, the fact is not one that consists in something's

[23] It does not follow that conjunctions are never grounds. In particular, if there are *organic unities*, cases in which the whole is more than the sum of its parts, then the conjunction may make a contribution that goes beyond the sum of individual contributions of its conjuncts. This would also give us some reason to regard conjunctive facts (and perhaps also properties) as irreducible to their conjuncts.

[24] This example is adapted from Greg Restall's objection to minimality in truthmaker theory, in his "What Truthmakers Can Do for You," Automated Reasoning Project, The Australian National University, Canberra (1995). For discussion, see D. M. Armstrong, *Truth and Truthmakers* (New York: Cambridge, 2004).

[25] I discuss this conception of properties further in "How to Rule Out Disjunctive Properties," forthcoming in *Noûs*. See also section v below.

having a property. Now, one could regard 'the fact that *x* exists' as having no more significance, ontologically, than *x* itself. 'The fact that *x* exists' is just the way to render our commitment to *x* in fact talk. This approach breaks from the conception of grounding that I want to defend. It is important that the relata of grounding be facts that consist in things having properties (in the broad sense that includes relations) because grounding relations, on my view, are tied to the natures of properties. If we had a fact that required nothing of its constituent object except that it exist, there would be no clear way in which the nature of any property suited it to stand in any grounding relation.

My denial of existential facts might appear to severely delimit the scope of my account of grounding, but ultimately I do not think it does. One might worry, for example, that if there are no existential facts, then grounding simply fails to have any application in cases of constitution and composition. But, the objection continues, it surely seems plausible to think of the statue as grounded in the clay, and to interpret this as meaning that *the fact that the statue exists* is grounded in facts about the clay. I do deny that we can give this interpretation, but there are other ways that grounding might be seen to work in such cases. The denial of existential facts does not, for example, preclude saying that [*x* is a statue] is grounded in [*x* is clay of a certain shape] or that it is grounded in [the *y*s are arranged in a certain way]. The bare "fact" that something exists is not a candidate to stand in a grounding relation, on my view, but any fact about what it is like still is.

I am inclined, then, to reject the would-be counterexample as a genuine case of grounding. So, as yet, I see no insurmountable obstacle to treating grounding as minimal, at least where it is understood as a relation between worldly facts, and so I adopt minimality as a working hypothesis. Those who accept the conceptual view of facts or admit existing as a genuine property may be forced by the example to reject minimality.

IV.5. Nonmonotonicity and Defeating Conditions. Nonmonotonicity opens up the possibility of inconsistency, which we must take care to foreclose. The threat is well illustrated by the following ethical example. Recall that grounding obeys the entailment principle, so that if [*p*] grounds [*q*], then *p* entails *q*. The following claims are all initially plausible:

(13) [*x* is a lie] $\rightarrow_g$ [*x* is wrong]
(14) [*x* is a lie & *x* is necessary to save a life] $\rightarrow_g$ [*x* is not wrong]
(15) *x* is a lie & *x* is necessary to save a life

But these are mutually inconsistent.[26] Now, it might be obvious that my response will be to deny (13) and (14)—formulated as they are in terms of fully grounding—and replace them with the correlative claims in terms of partly grounding:

(13*) [*x* is a lie] $\dashrightarrow_g$ [*x* is wrong]
(14*) [*x* is a lie & *x* is necessary to save a life] $\dashrightarrow_g$ [*x* is not wrong]

But there is more to be said.

For one thing, it is important to see that nonmonotonicity is not the sole source of the problem. An essential part of the problem is *defeasibility*. In the above example, the act's being a lie would make it wrong, but in (14) its ability to do so is defeated by its being life-saving. If we have a nonmonotonic relation that is also indefeasible, however, no such inconsistency can arise. Now, given that grounds necessitate, grounding is indefeasible in one important sense: if a full ground of some fact obtains, then nothing else could come about that would prevent the grounded fact from obtaining (without also making it the case that the grounding fact no longer obtained). So if it were the case that the act's being a lie fully grounded its wrongness, then no addition—not even its being life-saving—could make it the case that the act was not wrong. Of course, this is not plausible from the standpoint of ethics, and so we should deny that an act's being a lie ever fully grounds its being wrong. We can, however, still say that an act's being a lie partly grounds its being wrong, provided there is some set of facts that, in combination with the act's being a lie, fully ground its being wrong. (More on this presently.)

Now, implicit in the above example are many assumptions about ethics. First, the example presupposes that there is in fact a property of wrongness. My account of grounding does not presuppose that there is such a property. But since my account treats grounding as a relation between facts, construed specifically as things' having properties, my account applies to wrongness in the way I have supposed only if wrongness is a genuine property. Second, the example presupposes a pluralist, nonreductive realism. It presupposes that being a lie, for example, is just one of the various wrong-making natural properties. The example cannot involve reduction, else the relation between the natural fact and the normative fact would be identity rather than grounding. (On this point, see the next section.) And the example requires pluralism because the defeat

[26] Note that its being the case that *p* entails that [*p*] exists.

of one consideration by another requires that there be considerations sufficiently different in kind to generate conflict. Ethical theorists who deny these assumptions, then, should treat this not as a reason to reject my view of grounding, but only as a reason to deny that it applies to ethics in the way the example presupposes.[27]

Some might worry that while I have staved off sheer inconsistency, I have not yet shown my theory to have the resources to apply to moral facts, even assuming there are such facts. One might worry that it is not enough just to say that the act's being a lie *partly* grounds its being wrong, since the definition of partly grounding then requires that being a lie be part of a full ground of wrongness. What is the rest of that full ground? Does being a lie play any kind of role in grounding wrongness that survives the absence of the rest of the full ground? That is, does the fact that an act is a lie make some contribution toward wrongness even when the act is not wrong?

On the pluralist realism that the example presupposes, a natural account suggests itself. Even when it is not wrong to lie, it seems that the fact that the act is a lie counts against the action. If the life could be saved without lying, that would be even better (at least other things equal). We can describe this "counting against" as there being a reason (in this case outweighed) not to perform the action, or as the act's being *prima facie* wrong (though not wrong all things considered). Whatever we say, it seems that we are appealing to two important notions. First, there is the property we might call *prima facie obligatoriness*, and second, there is a relation of *strength* among the various moral considerations, which turn out to be such natural properties as being a lie, being a breach of promise, being charitable, and so forth.[28] (Perhaps these are primitive. Perhaps some analysis is forthcoming. It does not matter to the account given here.) With this apparatus, we can say that being a lie is a full ground of prima facie wrongness (equivalently, the prima facie reason to refrain from the action), but only a partial ground of all-things-considered wrongness.[29]

[27] On the view that grounding relates facts understood conceptually, grounding might apply to facts about wrongness as it is conceived by antirealists. For discussion, see Fine, "The Question of Realism."

[28] Cf. W. D. Ross, *The Right and the Good* (Oxford, UK: Clarendon, 1930).

[29] Note that if being a lie fully grounds being prima facie wrong, then given the generality of grounding, a qualified form of moral generalism follows. In fact, I think that a cogent argument for moral generalism can be made in part by appeal to my theory of grounding. But I do not claim that moral generalism just falls out of the theory of grounding. Even if I have the nature of grounding right, it remains to argue fully that wrongmaking is a case of grounding.

When a lie is wrong, the full ground of its being so is the fact that it is a lie together with the fact that its being a lie is the strongest relevant consideration. This allows us to reconcile the metaphysical indefeasibility of grounding with the moral defeasibility of the partial grounds of wrongness.

It is, of course, beyond the scope of this paper to defend this ethical theory. But it is important to see that there is an ethical theory in which grounding can do some work, specifically, by providing a metaphysical account of what "wrongmaking" consists in. And it is important to see that maintaining the nonmonotonicity of grounding does not make the theory too narrow to apply in ethics, at least assuming a robust form of moral realism.[30]

V. AGAINST THE GROUNDING-REDUCTION LINK

I noted above that my ethical example presupposes a nonreductive view of wrongness because if wrongness should reduce to some natural property, then the relation between the natural fact and the normative fact would be identity rather than grounding. This assumes that grounding and reduction are incompatible, which is by no means obvious, though I shall now argue that it is the case.

Let us begin with Gideon Rosen's contrary claim that reduction in fact implies grounding, which he calls the *grounding-reduction link*:

(GRL) For any p and q, if [p] reduces to [q], then [q] grounds [p].[31]

According to this principle, if the fact that some item, x, is a square reduces to the fact that x is an equilateral right quadrilateral, henceforth *ERQ*, then it is also true that the fact that x is a square obtains in virtue of the fact that x is an *ERQ*. More generally, (GRL) represents the idea that the reduction base of any given fact explains why it obtains. But of course one fact can explain another only if they are different facts, and so (GRL) rules out treating reduction as entailing fact identity. This rejection ultimately conflicts with the worldly conception of facts (given certain plausible claims about property identity). The conflict can be brought to light by the following argument against (GRL).

(GRL) For any p and q, if [p] reduces to [q], then [q] grounds [p]. (For reductio.)
(15) [x is a square] reduces to [x is an *ERQ*]. (Premise.)

[30] Perhaps the theory has little to offer the ethical antirealist. But that is not much of a surprise. What grounds what, on my view, is a substantive ontological matter, while antirealism is a form of metaphysical deflationism.

[31] See Rosen, *op. cit.*, pp. 124–25.

(16) [*x* is a square] is grounded in [*x* is an *ERQ*]. (From GRL and 15.)
(17) The property of being a square just is the property of being an *ERQ*. (Premise.)
(18) For any *x*, *y*, *F*, and *G*, if *x* = *y* and the property of being *F* = the property of being *G*, then [*Fx*] = [*Gy*]. (Worldly Conception of Facts.)
(19) [*x* is a square] = [*x* is an *ERQ*]. (From 17 and 18.)
(20) For any *p* and *q*, if *p* is grounded in *q*, then [*p*] ≠ [*q*]. (Irreflexivity of Grounding.)
(21) [*x* is a square] is not grounded in [*x* is an *ERQ*]. (From 19 and 20.)
(22) (16) and (21) are contradictory; hence (GRL) is false.

I do not take this to be a knockdown argument against (GRL), but it highlights what in my view is its heavy theoretical cost. Let us consider where Rosen would resist the argument.

Rosen rejects at least (18), the worldly conception of facts, and perhaps also (17), the property identity claim. He accepts the irreflexivity of grounding, and so is committed to holding that the terms of the reduction are different facts. On his view,

> The trouble comes from…the thesis that facts and propositions are individuated by their worldly constituents and the manner of their combination….We can resist this line of thought by insisting that the operation of replacing a worldly item in a fact with its real definition never yields the same fact again. It yields a new fact that 'unpacks' or 'analyzes' the original.[32]

He gives two examples in support of this idea. The first involves what it is to be a certain individual, the number 2:

(23) For all *x*, [*x* = 2] reduces to [*x* = the successor of 1].

The reduced fact, he says, "contains 2 as a constituent, but need not contain the successor function or the number 1."[33] Now, if 2 is *identical with* the successor of 1, there is no possibility of its being a constituent of one of these facts but not the other.[34] So Rosen appears committed to holding that it is not 2 itself but something like modes of presentation of 2 that are constituents of the relevant facts. One of them presents 2 brutely, by name (or anyway rigidly), and the other

[32] *Ibid.*, p. 124.
[33] *Ibid.*, p. 125.
[34] Furthermore, it is not open to reply that the successor of 1 is not a constituent of [*x* = the successor of 1], and that instead its constituents are 1 and the successor function. The quantifier in (23) ranges over the occurrences of *x* in each fact, and so if indeed these are true identities, by transitivity, 'the successor of 1' in the proposed reductive fact must denote 2. I should also say that identity facts, like existence facts, appear to make sense in the first place only on the conceptual view of facts.

presents it via a description (albeit a description 2 satisfies necessarily). This obviously is to embrace the conceptual view of facts. Moreover, it is consistent with saying that facts are individuated by their constituents—conceptual rather than worldly—and the manner in which those constituents are combined.

Rosen's other example concerns a property rather than an individual:

(24) For all *x*, [*x* is square] reduces to [*x* is an *ERQ*].

Rosen displays some sympathy for the view that the *property* of being square is identical with the *property* of being an *ERQ*—which together with the worldly conception of facts would yield the identity of the relevant facts as well. But he says "in general, the thesis that a property is composed of the items that figure in its definition is not so plausible."[35] Discussing disjunctive properties as a case of apparently complex properties, he adds "grue stands to green and blue as the value of a function stands to its arguments.…this relation is not one of part to whole."[36] If the properties of being equilateral, right, and quadrilateral are not parts or components of the property of being square, then presumably being square is not identical with being an *ERQ*, and (17) in the above argument is false. In principle, then, Rosen could keep both (GRL) and the worldly conception of facts (as formulated above)—provided that no case of reduction involved the identity of the property in the reducing fact with the property in the fact to be reduced.[37]

While denying the relevant property identities is formally consistent with the worldly conception of facts, any view of properties on which it is plausible to deny the relevant identities (or the corresponding fact identities) will make sense only on a conceptual view of facts. The worldly conception of facts entails that either [*x* is square] is the same fact as [*x* is an *ERQ*] or the property of being square is not the property of being an *ERQ*. Suppose one opts for the latter, holding the facts to be different because the properties are. The question now is how it could make sense to deny that the properties are the same. And it seems to me that this requires individuating properties conceptually. On the view that properties are a certain kind of constituent of objects, responsible for those objects' behavior (causal and noncausal) and for their relative similarity, it

[35] *Ibid.*; see also his note 14.
[36] *Ibid.*, p. 125.
[37] Note that this would be a departure from the usual understanding of reduction. The paradigm cases of (putative) reductions are usually construed as involving property identities, such as the identity of being water with being H_2O and of temperature with mean molecular kinetic energy.

makes little sense to treat squareness as anything but a conjunction of the properties that define it (or to think of having a "conjunctive property" as anything more than having its conjuncts). Once an object instantiates the defining properties, there is nothing left for squareness to contribute. The same point can be made by concentrating on the facts. It seems to make sense to hold that [*x* is square] is a different fact from [*x* is an *ERQ*] only if one is willing to allow conceptual differences to individuate the facts. Now, one can accept what I have called the worldly conception of facts and still hold these facts to be different owing to different constituent properties, but only by taking those properties to be individuated conceptually. (Conceptualism, then, has just been shifted from the identity conditions of facts to the identity conditions of properties). Unless one takes conceptual differences to be relevant, it seems quite implausible to regard the facts in question as different.

If I am correct, then, Rosen is committed to the conceptual view of facts. But there is a powerful reason not to regard grounding as a relation between facts so construed. Grounding is supposed to be among the relations that constitute the objective structure of the world, the structure that it would have no matter how we conceive its inhabitants (if we conceive them at all). Now, I do not mean to suggest that treating grounding as a relation between facts conceptually construed makes grounding entirely conceptually relative, that is, such that what grounds what is a variable matter that depends on which conceptual scheme we adopt from among mutually exclusive candidates, none of which is privileged. That objection would depend on a wishy-washy view of concepts. The concept of 2 as the successor of 1 is hardly one we apply arbitrarily, and it is not as if we might just as well conceive 2 as the successor of 3. So what grounds what need not be variable even if grounding is a relation between facts understood as conceptual rather than worldly. But even so, on the conceptual view, grounding is not a relation between worldly items. Grounding, on that view, structures a hierarchy within the way we conceive of properties and the things that have them. It does not structure a hierarchy among those properties and things themselves. On the conceptual view, when we discover, for example, that [*x* is square] is grounded in [*x* is an *ERQ*], we learn that the concept denoted by 'being square' is in some way a less accurate representation of a certain property than is the concept denoted by 'being equilateral and right and quadrilateral'. We do not, as on my view, discover that two different properties are essentially connected.

A slightly different way of making the point may add clarity. Suppose what it is to be prime is to have exactly one proper factor

(this is at once a real definition and a claim of property identity). Given the irreflexivity of grounding, [2 has exactly one proper factor] can be plausibly claimed to ground [2 is prime] only if we understand these facts as differentiated by their different conceptual presentations of their constituents. But then what makes one fact the ground is not merely the nature of its constituent property but the nature of the concept by which that property is presented.

Now, of course, one might think we should take grounding to be a relation between conceptual facts because it is priority relations among concepts that are really at issue. This is a perfectly coherent view, but one that I reject. I am interested in a relation between worldly facts, a relation by which the natures of properties manifest themselves. This understanding of grounding is incompatible with the grounding-reduction link.

VI. GROUNDING AND ONTOLOGICAL COMMITMENT

When one fact grounds another, is the grounded fact *nothing over and above* its ground? On my view, the answer is *No*. This will be surprising if one thought that the philosophical purpose of allowing grounding was to render "higher-level" phenomena respectable by rooting them in, or even reducing them to, the "lower-level" phenomena that are beyond suspicion. And indeed this is the approach to grounding that some authors take. Jonathan Schaffer, for example, says that

> there is no longer any harm in positing an abundant roster of existents, *provided it is grounded on a sparse basis*. (This is why the neo-Aristotelian can be so permissive about what exists. She need only be stingy when it comes to what is fundamental…).[38]

My denial of this represents a major difference between my conception of grounding and that of Schaffer and others.[39] Where they appear to think of grounding more by analogy with constitution and composition, my emphasis on determination casts grounding as more kindred with causation and explanation. I posit grounding not as a bridge between the macro and the micro, nor as what Karen Bennett calls a *building relation*, but as necessary to account for the

[38] Schaffer, "On What Grounds What," p. 353.

[39] Rosen, I think, would accept that grounded facts are nothing over and above grounds at least in cases of reductive grounding. Fine sometimes says that what is grounded "*consists in nothing more*" than its ground, but cautions, "all that is properly implied by the statement of (metaphysical) ground itself is that there is no stricter or fuller account of that in virtue of which the explanandum holds" ("Guide to Ground," p. 39).

correctness of certain explanations that cannot be understood as causal explanations.[40] The function of grounding, then, is to make sense not of a mereological or "layered" structure of the world, but of a certain kind of explanatory structure.

I have argued that grounding is a relation between worldly facts and is incompatible with the reducibility of the grounded fact to the grounding fact (and incompatible with the reducibility of the properties in the grounded fact to the properties in the grounding fact). This commits me to denying that what is grounded is "nothing over and above" its grounds. Now, the phrase 'nothing over and above' is notoriously vague, but the following is clear: if [*p*] is not identical with, and is in no way constituted by, [*q*], then it is false that [*p*] is nothing over and above [*q*]. So on my view, grounding cannot be used to reduce ontological commitments. Explaining one fact by another, given the grounding relation between them, commits one to any constituent in either fact, and this will always include at least two different properties, one a constituent of the grounding fact, the other a constituent of the grounded fact. For example, if one holds that [the shirt is maroon] grounds [the shirt is red], one is ontologically committed to the shirt, redness, and maroonness. Indeed, only if redness is a property in its own right, not reducible to some complex involving its determinate shades, will there be any need to posit a relation of grounding between these facts. Compare the view that 'is red' is simply an imprecise color predicate, applying to things that are imperfectly similar in respect of color.[41] On this view, there is no worldly fact that the shirt is red. The only fact in need of explanation is that 'is red' applies to the shirt. (One might still hold that such predicational facts stand in grounding relations, and on my view that entails—what is independently plausible—that there is such a thing as the predicate and such a relation as its applying to a particular.)

Now, even if grounded facts constitute an "addition of being" beyond the facts that ground them, it does not follow that grounding has no role to play in ontology. According to the friends of grounding, at least, ontology is not merely a matter of listing everything that exists. A full-scale ontology requires charting relations of priority among the things that exist, thereby classifying what there

[40] Bennett discusses grounding under the general heading of building relations (*op. cit.*), but she seems to have Schaffer's conception in mind. I deny that my conception is aptly thought of as a building relation, in particular because I deny that it involves the broad sort of overlap that she requires to hold among the relata of such relations.

[41] For this view, see Heil, *From an Ontological Point of View* (New York: Oxford, 2003).

is into the fundamental and the derivative.[42] Now, just as there are different conceptions of grounding, there are different conceptions of fundamentality. If a fact has no ground, then it is fundamental in one perfectly good sense: there is no explanation of why it obtains (at the very least, no explanation in terms of ground). But it is a different matter for an item to be fundamental in the compositional sense, which is to be mereologically basic, to have no parts or decomposition into simpler entities. At least in the case of properties, these notions come apart. Call a property *explanatorily fundamental* just in case none of its instances is grounded in a further fact. And call a property *compositionally fundamental* just in case it is not a composite of other properties. Often, these senses of fundamentality will coincide, as (presumably) in the case of the mass of the smallest simple. But what about obligatoriness? According to nonreductive naturalism in ethics, obligatoriness is not composed of other properties (if it were, it would be reducible to them), and yet it is not explanatorily fundamental. The fact that an act is obligatory will obtain in virtue of some natural fact, such as the fact that it maximizes happiness.

Suppose that whenever obligatoriness is instantiated it is instantiated in virtue of natural properties' being instantiated. Is this very fact enough to render obligatoriness naturalistically acceptable? A similar question arises in the case of the mental. Assume that whenever pain is instantiated, it is instantiated in virtue of physical properties' being instantiated. Is that very fact enough to render pain physicalistically acceptable? I believe exploring these questions will bring to light an important limitation on the role of grounding in ontology. The answers, of course, depend on what exactly naturalism and physicalism require. Physicalism, at least, is often conceived as involving a nothing-over-and-aboveness requirement.[43] I have claimed that what is grounded fails to be nothing over and above what grounds it. Grounding, then, will be no substitute for an account of *realization*, which is supposed to insure nothing-over-and-aboveness.[44] This is not to deny that one might plausibly hold, say, that one's being in pain is grounded in one's having a certain neurological property. But this view will be importantly different from the view that one's being in pain is realized in one's having the neurological property, and will

[42] This is a point made nicely by Schaffer, "On What Grounds What."

[43] See, for example, Terence Horgan, "From Supervenience to Superdupervenience: Meeting the Demands of a Material World," *Mind*, CII, 408 (October 1993): 555–86; and Jessica Wilson, "How Superduper Does a Physicalist Supervenience Need to Be?" *The Philosophical Quarterly*, XLIX, 194 (January 1999): 33–52.

[44] I am grateful to Laurie Paul for discussion of this point.

not automatically be a form of physicalism. Again, whether or not such a view counts as physicalist depends on a number of other factors, such as whether it is sufficient for physicalism that every mental fact be noncausally explainable by appeal only to physical facts.

I will close by addressing a final worry. One might wonder what the purpose is of positing grounding if a fact's being grounded does not render it at least as ontologically innocent as its grounds. One might have thought that was the whole point of grounding. Not on my view, however. Recall my argument for grounding. I argued that we must recognize grounding because there are a number of explanations that cannot be understood as causal, yet even so require some relation of determination to underwrite their correctness. The reason to countenance grounding, as I conceive it, is to make sense of such explanations. Now, the explanations in question are by no means uncontroversial, but I do think they deserve to be called commonsensical. The cases of grounding I take to be most important and most plausible—cases of normative properties, aesthetic properties, semantic properties, and dispositions—involve properties that are well entrenched in commonsense thought about the world. A widespread view about the metaphysics of such properties is that they are never instantiated brutely. My claim is that grounding is an essential element in that view. The fact that any given instance of such a property is grounded may not show that it is nothing over and above its grounds. But grounding earns its place in accounting for how their instantiation can be correctly and objectively explained. That is no mean metaphysical feat.

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