Grounding is not Causation

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Grounding is not causation, and is not even substantively <u>like</u> causation, *contra* its contemporary characterizers. Apparent similarities between causation and grounding are mostly superficial, and utilizing causation as a way to illuminate ground glosses over their important dissimilarities while failing to untangle distinct, subtle problems that both grounding and causation face. Or so I will argue.

By way of background: recent years in metaphysics have seen a surge in literature on grounding, roughly, the relation that connects more and less fundamental entities.[1] Proponents of grounding (hereafter: groundhogs[2]) mean to explain a plentitude of interlevel relationships, including the various relationships between makers and makees, including "littler" things at the bottom levels of reality and the "bigger" things they make up, as well as the relationship between the physical and the mental, nonmoral facts and moral facts, generalizations and their instances, aesthetic properties and natural properties, and knowledge and true belief, to name a few.

The ascent of the notion of grounding has given rise to several forms of pushback. One form (which Schaffer calls *grounding nihilism*) denies that grounding is a distinctive notion apart from other making-up relations like composition, constitution, supervenience, and the determinate/ determinable relation.[3] Other challengers hold that grounding, taken as a metaphysical primitive, is too opaque to do the explanatory work on which its hopefuls bank: it is supposed to be the glue that holds reality together, but is irredeemably mysterious.

One popular response to this latter form of grounding skepticism is to illuminate the notion of ground by appeal to the more familiar notion of causation. Many groundhogs describe their notion as "metaphysical causation", pointing especially to the similarities between metaphysical explanation and causal explanation. Schaffer offers "a

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[1] Here I remain neutral on whether the *relata* of grounding are facts or spatiotemporally located entities. I will discuss both.

[2] I owe thanks to Kit Fine's "Essential Glossary of Ground" for this term.

[3] Jessica Wilson (2014) argues most prominently for this view.

treatment of grounding in the image of causation" (2016, p. 37), and suggests:

> "Grounding is something like metaphysical causation. Just as causation links the world across time, grounding links the world across levels." (2012, p.122)

Fine holds that "Ground […] stands to philosophy as cause stands to science." (2012, p. 40) Some go further than mere analogy, holding that grounding is, literally, a type of causation. Alastair Wilson (forthcoming) writes:

> "[…] grounding *just is* a type of causation: metaphysical causation […] whenever A grounds B, A is a (metaphysical) cause of B and B is a (metaphysical) effect of A. Grounding is a way of causing."

Bennett (MS) argues that causation is a kind of building relation, writing:

> "Building is noncausal determination. It is a mistake to think of 'vertical' determination as easily distinguished from 'horizontal' determination, because the building family is causally tainted in at least two ways. First, causation itself is properly counted as a building relation. Second, there are particular building relations that are partially defined in causal terms, and even building relations that only obtain diachronically, in virtue of causal facts." (p. 4)

In the following discussion, I set these claims in my sights. I target two distinct but similar theses: what Schaffer (2016) calls "grounding-causation unity", the thesis that grounding and causation are only nominally distinct relations, and what I will call "grounding-causation comparison", the methodological process of illuminating ground by appealing to similar features of causation. I call proponents of either of these two theses *Grinders*, or those who meld together the notions of causation and grounding literally or metaphorically. Roadmap: In section 1, I discuss apparent similarities between causation and grounding. In section 2, I describe structural, logical, and dialectical differences between causation and grounding. In section 3, I address objections and make

some methodological observations.

1. Similarities between Grounding and Causation

It is easy to see why the grounding-causation analogy is inviting. Causal claims and grounding claims back explanation by involving "because" or "in virtue of" structures: the window shattered because the ball was thrown through it, and the car exists because its parts exist. Both involve determination relations: dropping the cup determines its cracking, and the existence of the parts arranged in a particular way guarantees the existence of the car. Thus, both grounding and causation might be seen as a kind of "generation": a cause generates its effect, and grounders "generate" groundees.

There are also parallels in the involvement of laws. Consider a cup that falls to the ground and cracks. What causally explains the cracking of the cup? Not just that it fell to the ground, but that certain natural laws hold that gravitational forces will act on the cup in a certain way when there is nothing underneath it. In this way, the explanation for the cup's cracking is partially causal and partially non-causal, due in part to causation and in part to natural laws. Similarly, we might ask why a particle is a hydrogen atom. The answer is that the hydrogen atom is composed of one proton and one electron in a particular configuration, combined with what Schaffer (2010) calls "laws of metaphysics". Kment (2014) holds: "Certain general metaphysical principles, which I will call "laws of metaphysics," play essentially the same role in grounding as the natural laws do in causation." (2014, p. 5)

A case can also be made that there are two concepts of grounding that mirror Hall's (2004) "two concepts of causation". According to that model, there is a *productive* sort of causation that often involves an *oomph*, mark transfer, or transfer of conserved quantity from cause to effect. A paradigm case of productive causation is one domino striking another. And there is a contrasting *dependent* sort of causation, involving counterfactual dependence of the effect on the cause. Dependent causation does not necessarily involve energy transfer or spatiotemporally local causal chains.

At first, production may not seem to play a role in grounding, since grounding is not thought to involve energy transfer between *relata*. But production does play an

implicit role in concepts and elucidations of grounding which take it to be a kind of synchronic generation or "bringing into existence." We might consider production to undergird a "thick" concept of grounding according to which grounders transfer being to their groundees. (In Section 2.1, I suggest that grounding production is not like causal production.)

In contrast, we might consider dependent causation to be akin to "thinner" concepts of grounding that merely involve supervenience, determination, and other sorts of modal relationships that do not necessarily involve the concept of generation. Dependent causation clearly evokes the key modal and determination properties of grounding, for the effect depends on a cause and the groundee depends on the grounder in conceptually similar ways. Both dependent causation and dependent grounding can be expressed in metaphysical dependence conditionals, such as "If the ball hadn't been thrown, the window wouldn't have shattered" or "If the particles hadn't existed, the ball wouldn't have existed".

It is clear that if we put ourselves in a certain metaphysical mood, we will find grounding/ causation similarities everywhere we look. Space forbids me from discussing all of them, but here I will name a few more similarities. Both grounding and causation can be represented in a framework of formal structural models, which Schaffer (2016) and Alastair Wilson (forthcoming) carefully elucidate.[4] Sense can be made of the similar notions of partial causes and partial grounds: roughly, facts that contribute to but don't entirely ground others, and causes that contribute to but are not alone sufficient for their effects. The question of whether there can be uncaused causes is parallel to the question of whether there can be ungrounded grounds. Both causation and ground face similar questions about modal necessitation. There can be grounding loops just as there can be causal loops.[5] These smaller analogous threads of the grounding/ causation analogy are easy to find when hunting for them. But, as I shall argue, there are more differences than commonalities to be found in the tendrils of both, and ignoring these differences while straining for the parallels is methodologically misguided.

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[4] Koslicki (2016) makes a compelling case against similarities of causation and grounding based on formal structural models, so I will not cover that territory here.

[5] Nolan (forthcoming) argues for the possibility of grounding loops.

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2. The Differences

On to the differences between causation and grounding. Call *structural* differences those in which grounding and causation differ with respect to their key features and descriptive possibilities. Call *logical* differences those involving variation in the logical behavior of each notion, including asymmetry, irreflexivity, and transitivity. And call *dialectical* differences those involving possible and actual dialectical moves in the debates over the features of grounding and of causation.

2.1 Structural Differences

A well-known difference between causation and grounding is that the former is *diachronic* (it happens across time) whereas the latter is *synchronic* (it happens at the same time). Grinders tend to gloss over this difference, holding that it doesn't signal a deep metaphorical disanalogy between the two. Others back this point by holding that causation can occur synchronically and that grounding can happen diachronically.

But the diachronic/ synchronic distinction creates more differences than Grinders realize. Here I will name three. First: questions about the metaphysical relationship between causation and time are more complex and rich than those involving ground and time. It is a substantive metaphysical question whether causes always temporally precede their effects. But it is not a substantive question whether grounders are metaphysically prior to what they ground: they must be. It is also a substantive metaphysical question whether causation has an intrinsic direction. But it not a substantive question whether grounding has an intrinsic direction: by definition, grounds ground groundees.

Second: Grinders also face a problem of distinguishing between simultaneous causation and grounding. For one would not want to hold that cases of simultaneous causation *just are* cases of grounding. Consider Newton's law of universal gravitation, which holds that more separation distance results in weaker gravitational forces between objects. This is an intuitive example of simultaneous causation between objects: the separation of the objects causes both to be exactly where they are.[6] But it is not, intuitively, a case of grounding. Or consider Taylor's (1966) example of an iron ball

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[6] Huemer and Kovitz (2003) give a similar example of simultaneous causation.

depressing a cushion. This is a case of simultaneous causation, but it is not a case of grounding. Grinders will have trouble distinguishing these sorts of cases of simultaneous causation from cases of grounding, if grounding is or is like synchronic causation.

Third: the diachronicity of causation allows for *hasteners* and *delayers*, modifiers that hasten or delay an event's occurrence.[7] An assassin who hastens the death of a person dying of disease is a hastener; a doctor who delays a medically inevitable death by a week is a delayer. It is typical to accept a causal asymmetry between hasteners and delayers: generally, hasteners are considered causes but delayers aren't.[8] Moreover, not every hastener is a cause: an obstetrician who induces a birth that is already going to happen affects the birth, but doesn't intuitively cause the birth to occur. In this and other cases, something can make a difference to an event without causing it to happen.[9]

Since grounding is synchronic, grounding has no analogue for hastening and delaying. Perhaps the closest analogue would be sufficient grounds that generate groundees at a lower level than they would have occurred otherwise. But it is difficult to think of such a case, and any example would be deeply disanalogous to causal hastening and delaying owing to its synchronicity. Since there is no grounding analogue of hastening and delaying, there is also no grounding-analogous asymmetry between hastening and delaying, nor a grounding parallel for making a difference to an event without causing it to happen.

These three points are enough to motivate the idea that the diachronicity of causation compared with the synchronicity of grounding represent deeper metaphysical differences than Grinders have previously realized. The supposed superficiality of the diachronic/ synchronic distinction glosses over these key differences.

Grounding and causation also differ insofar as it is widely accepted that causation can be *indeterministic*. Chancy causation links causes and effects through probabilities: *e* causally depends on *c* if the chance of *e* would have been significantly lower without *c*'s occurrence. Consider a case in which a particle's decay will cause an alarm to sound, and it is indeterministic whether or not the particle will decay. This case of chancy causation

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[7] See e.g. Mackie (1992) for a long discussion of hasteners and delayers.

[8] Schaffer (2005) holds that the asymmetry is due to hastening closing off possibilities.

[9] Sartorio (2006) discusses these cases in detail.

is not akin to any case of grounding, because grounding cannot be indeterministic.[10] Schaffer writes:

> "[…] indeterministic grounding seems impossible. Grounding seems to imply supervenience: fix the grounds and one fixes the grounded. The status of the grounded thus cannot be open to chance. By way of illustration, it seems impossible that, given a fixed physical ground, the biological status of the system remains open to chance." (Schaffer 2016)

Sufficient grounds for a particular entity automatically raise the probability of that entity's occurrence to 1. It is well-known that some causes lower the probability of their effects, and some events raise the probability of their effects without causing them.[11] But there is no analogous wiggle room in grounding: grounds are always probability-raisers of their groundees.

   Return to the productive and dependent concepts of grounding akin to productive and dependent concepts of causation. On the surface, that this parallel can be made seems to reinforce the grounding-causation analogy: grounding can be generative and involve modal determination just as causation can be productive and involve counterfactual dependence. But, as I will now show, there are several ways in which the comparison is inappropriate.

   First, if there is such thing as productive grounding, it is unlike productive causation. The sense in which grounders "produce" groundees is not the same sense in which causes produce their effects. To use Schaffer's terms, groundees "inherit their being" from grounders, but effects do not inherit their being from causes. God need only make the grounders in order to make the groundees, but the effect must be created apart from the cause. Productive causation involves a kind of "bringing into existence". But grounding doesn't create extra construction work: all God had to do was create the grounders in order to make the groundees. The nonfundamental facts come for free. But

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[10] Emery (MS) argues that laws ground their instances, and since laws are indeterministic, grounding can be indeterministic.

[11] Dowe (2004), for example, develops several cases of chance-lowering causes.

is not the case that "All God had to do" was fix the cause in order for the effect to occur. Regardless of one's view of determinism, the type of "bringing about" relationship involved in causation seems different than the type involved in grounding: God has to make an extra event, for example, that She does not have to make in a case of grounding.

Energy transfer accounts also invite strange comparisons. Consider one domino striking another domino, causing the second domino to fall. According to the productive approach to causation, what brings about the falling of the second domino is a transfer of energy from the first domino. On "mark transfer" productive accounts of causation, c brings about e by transferring a mark to e. But there is no viable parallel to be had in grounding: there isn't a transfer of energy between the more and less fundamental. Unless one holds that being transfers a mark to another portion of being, mark transfer doesn't have a direct analogue in grounding.

 Causation is thought to be an *intrinsic* relation while grounding is thought to be an *internal* relation. An intrinsic relation, roughly, is one that depends on nothing but the *relata* and what happens between them. An internal relation, roughly, is a relation fixed by the way the *relata* are. Grounding remains internal even while causation loses its apparent intrinsicality in the face of preemption. To further cleave apart causation and ground, suppose that ground is *superinternal* in the way that Bennett suggests:

> " A superinternal relation is one such that the intrinsic nature of only *one* of the relata — or, better, one side of the relation — guarantees not only that the relation holds, but also that the other relatum(a) exists and has the intrinsic nature it does." (2011)

If superinternality is true, the existence and nature of one of the *relata* guarantees the existence and nature of the other. The same is not true for causation. The existence and intrinsic nature of one causal relatum does not guarantee the existence and nature of another, nor the existence of a causal relation between them. Further, it is metaphysically possible for there to be a world with exactly the same causal relata as our world, yet in

which not all the causal relationships of our world hold.[12] Owing to its superinternality, the same is not true of grounding: with the grounds and groundees automatically come the grounding relations.

Next, consider that there are several varieties of causation that do not have an obvious parallel in grounding. Causation by omission, a scenario in which something that doesn't happen is a cause of something else, does not have a clean parallel in grounding. Omissions can be *causes*, as when a gardener's failure to water a plant causes a plant to die, and they can be *effects*, as when a police officer discovers a bomb and defuses it, causing the absence of casualties. Omissions can also be *intermediaries*, as when a gas leak causes a meeting not to occur, which in turn causes a delay in proceedings.

But failures and omissions do not play a similarly rich and ubiquitous role in grounding, particularly if the *relata* of grounding are spatiotemporally located things rather than facts.[13] Non-things can't ground things. And non-things are presumably ill-suited to be bottom-level *fundamentalia*.

Nor does taking the *relata* of grounding to be facts entirely solve the problem. Let us suppose that grounds are the analogues of causes; groundees are the analogues of effects; and the grounding relation is the analogue of the causal relation. We can imagine some instances in which some negative facts ground other negative facts. For example, the fact that Sara doesn't have straight hair grounds the fact that someone doesn't have straight hair. If this is true, then omission-like things can be derivative facts-- the analogue of the effect in a causal relation.

Negative facts, however, are not suited to being explanatory *fundamentalia*—they are not part of the basic level of facts that God has to fix in order to set up the world. In contrast, omissive causes seem to be a basic component of causation, no less causal than ordinary "positive" events.[14]

Cases of causation by omission create another causation-grounding divide owing to the metaphysical indeterminacy that afflicts causation by omission. Consider the

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[12] This claim depends on whether one takes natural laws to hold of metaphysical or nomic necessity.

[13] Many grounding theorists are friendly to causation by omission more generally. Schaffer (2005, 2012) is a booster of omissive causation. Kment (2014) holds that omissions can be part of the explanatory histories of causal outcomes, function in causal connectives, and are part of the class of nomic determiners of outcomes.

[14] *Pace* Dowe (2004b).

following case:

>**Battlefield**: Tarah is at the battlefield and sees that four of her soldiers are about to be slaughtered by the enemy. She could save any one of them, but only one of them. (She only has one bullet left, and each one of her soldiers is being attacked by one enemy soldier). She cannot get herself to choose which one to save so they all die.[15]

For what is Tarah causally responsible? It is implausible to hold her causally responsible for *all* of the deaths, since she could have saved, at most, one soldier. And it is implausible to hold her responsible for any particular death, since there is not reason to hold her responsible for the death of one soldier as opposed to another.

The best analysis of this case is that it is metaphysically indeterminate what Tarah is causally responsible for: there is causation, but the precise outcome for which Tarah is causally responsible is indeterminate.[16] Such cases of causal indeterminacy can be also be generated for *causes*, as when any one of a group of people could have saved a drowning child, but didn't; and *intermediaries*, as when failing to perform a number of possible actions leads to some further outcome.

Thus omissive causation can involve metaphysical indeterminacy of causes, effects, and intermediaries. Grounding, in contrast, cannot be metaphysically indeterminate: if the grounds and the grounded obtain, it must be the case that the grounding relation obtains between them.[17] Fundamental grounds cannot be indeterminate, since reality is, at the fundamental level, determinate.[18] Groundees cannot be indeterminate, since the grounders metaphysically necessitate them.[19] And the grounding relation itself must be determinate.

Another family of structural differences concerns redundant causal structures; roughly, situations in which there are multiple sufficient causes for an outcome. Causation sometimes involves cases of *preemption*, as when Billy and Suzy throw their

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[15] This case is modified from Sartorio (2006).

[16] I defend this thesis in detail in my (2016b).

[17] Opposing views include Litland (2015), who argues that grounding can be indeterminate based on disjunction elimination, and Kovacs (ms) argues that indeterminacy afflicts metaphysical explanation.

[18] For an argument that the world itself can be indeterminate at the fundamental level, see Barnes (2014).

[19] "Though see Skiles (2015), which argues that grounds do not metaphysically necessitate groundees."

rocks at a window at the same time, Billy's rock shatters the window, and Suzy's rock flies through the space where the window used to be. Some have argued that there can be cases of grounding preemption in the form of explanatory preemption. Karen Bennett (ms) admits the possibility of preemptive grounding. And Alastair Wilson (forthcoming) gives the following examples:

> "Cases of grounding early pre-emption tend to involve one principle trumping another. In the following examples, the presence and arrangement of my particles trumps the presence and arrangement of a subset of them in constituting a person, and the legal circumstances according to which a crime counts as a murder trump the circumstances according to which it counts as an assault." (p. 24)

Even if there are multiple sufficient grounds for a set of facts, preemptive grounding doesn't work like preemptive causation. Causal preemption requires diachronic spread of causes and effects: there can be no synchronic preemption. Additionally, preemptive grounding involves intimately related *relata* at different levels of specificity: murder is a kind of assault, and particles which compose part of a person are a subset of particles which compose all of a person. Preemptive causation, in contrast, can involve causes at the same level of specificity: two rocks or two assassins, for example.

This difference might not seem to be a deep metaphysical distinction on the surface: why should it matter how the preempted and preempting *relata* are related? But the differences between interlevel preemption and causal preemption display key differences between grounding and causation. First, preemptive grounding must be interlevel whereas preemptive causation can be either interlevel or intralevel. Second, any theorizing about the role of the preempting ground without its preemptor often requires counterpossible evaluation: there can be no set of particles that constitute the person without the subset of particles that constitute the person. Evaluating the grounding role of the preempted ground requires appealing to a metaphysically impossible world in order to assess its role. Evaluation of causal preemption, in contrast, does not require appealing to metaphysically impossible worlds: we can look to a nearby possible world where one

rock throw occurs without the other.[20]

Further, grounding preemption is impossible if grounding is an internal relation. For such a preemptive case would involve *X* being a ground for *Y* in one situation, yet not a ground in another situation in which *X* features yet is preempted by some *Z* in grounding *Y*. That can't happen if the grounder *must* ground the groundee in any situation in which they both feature.

Causal and grounding relations respond differently to violations of intrinsicality and internality brought about by preemption. It is well known that preemptive causal processes are counterfactual dependence-breaking backups for preempted causal process. In a straightforward case of causal preemption, for example, "Had Billy not thrown the rock, the window would not have shattered" is false (because Suzy's rock would have shattered the window had Billy's rock not shattered it) and "Had Suzy not thrown her rock, the window would not have shattered" is false (because Billy's rock would have shattered the window had Suzy's rock not shattered it.) Such examples are thought to violate the supposed intrinsicality of causal dependence: something outside the causal process running from cause to effect impacts whether dependence holds, since counterfactual dependence is broken by the presence of a backup cause. In contrast, preemptive grounding is impossible if grounding is internal.

Next, there is a particular variety of preemption, *trumping preemption*, for which a grounding parallel seems unlikely. Trumping preemption involves multiple complete causal processes, only one of which brings about the outcome owing to a law or rule that selects one over the other. For example:

> (Timed Art Installation) It is a rule of a remote-controlled art installation that at midnight it responds to the first command of the day. At 6am, remote control A commands the art installation's lights to blink to blink. At noon, the remote control B commands the art installation's lights to blink. At midnight, the art installation's lights blink.

Here, Remote Control A is intuitively the cause of the lights blinking on the art

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[20] Al Wilson (2016) argues that making sense of grounding requires an appeal to counterpossibles.

installation, whereas B is a trumped backup. This variety of preemption has no easy analogue in standard sorts of grounding, since grounding lacks its key elements. There are no metaphysical laws that select one set of grounds as having automatic primacy over another. Nor is there a good grounding analogue for a complete causal process that doesn't bring about the outcome: it is difficult to make sense of the idea of what it would be for a grounding relation to be "complete" but not ground its groundee. A complete but non-grounding process, should such a thing exist, would pose a threat to the superinternality of the grounding relation, since grounders are supposed to necessitate their groundees and the grounding relation itself.

The preceding discussion is meant to begin an investigation into structural differences between causation and grounding, but it is by no means the end of the story. Just as we can get ourselves into a mood friendly to the causation/ grounding analogy, a skeptical mood will generate many more differences once we begin looking. A few examples: Transworld causation is generally rejected, but there are no in principle reasons to reject transworld grounding. Causation might admit of degrees[21], but grounding cannot. Causation might involve dispositions towards manifesting powers; grounding is not dispositional. Grounding might be *backtracking* while causation isn't. Causation can happen by way of *deviant causal chains*, causal processes that bring about outcomes via alternate pathways, but grounding does not have an obvious analogue. Causation by double prevention does not have a clear grounding analogue. These are all avenues of further exploration.

2.2 Logical differences: Irreflexivity, Asymmetry, Transitivity, Hyperintensionality

Both causation and grounding are generally taken to be *irreflexive, asymmetric,* and *transitive*. Grounding is irreflexive insofar as things cannot ground themselves; asymmetric insofar as grounds ground groundees but not vice-versa; and transitive insofar as x grounding y and y grounding z guarantees that x grounds z. Superficially, the structural analogy seems to hold: causation is irreflexive because causes don't cause themselves; asymmetric because causation runs in one direction; and transitive because if

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[21] See Bernstein (forthcoming), Kaiserman (forthcoming), Braham (2009) and Moore (2009).

c1 causes c2 and c2 causes c3, c1 is considered to be a cause of c3.

Whether or not grounding and causation are irreflexive, asymmetric, and transitive are well-trod topics, so I will not delve deeply into those first-order debates here. It is worth noting, however, that even though there are parallel challenges of irreflexivity, asymmetry, and transitivity for causation and for grounding, the <u>motivations</u> for accepting and rejecting these features can differ. Here I briefly discuss them.

First, asymmetry. A single arrow of causal priority is important for productive causation because causes transfer some sort of conserved quantity to their effects, but not vice versa. Causal asymmetry also falls out of temporal asymmetry. But the same need not be true for grounding. As Barnes (forthcoming) points out there are rarely arguments or reasons provided for the asymmetry of ground. One *prima facie* reason for groundhogs to posit asymmetry is that ground is supposed to be "directed" in some sense in order for it to structure the world the way it does. But given that ground isn't meant to be generative or energy transferring, there isn't any principled reason not to hold that grounders are in some sense dependent on their groundees in addition to groundees being dependent on their grounders. The synchronicity of grounding leaves this possibility open.

The motives for denying reflexivity differ between grounding and causation theorists. A groundhog denies reflexivity because the job of grounding is to structure being hierarchically. A causation theorist denies reflexivity due to the putative match of the causal and temporal arrows. An event out of causal order suggests a temporal anomaly; an entity out of its place in the grounding hierarchy violates the very spirit of ground. Causation theorists who admit the possibility of self-causation through time travel don't violate the spirit of causation because there is nothing intrinsic to a cause in virtue of which it must occur before its effect. In the great Humean mosaic, causes become before effects, but not due to the nature of the bits themselves. Groundhogs, in contrast, would violate the spirit of grounding to admit that cases of self-grounding are possible. To do so would be to do violence to the hierarchical structure that grounding provides. As Jenkins (2011) points out, rejecting the irreflexivity of dependence would require a new structure-imposing piece of machinery to do the job that irreflexive dependence relations were supposed to do. In contrast, denying the irreflexivity of

causation wouldn't necessarily require new causal tools to keep the theoretical functions of causation intact.

Finally, transitivity. The motivations for holding onto transitivity for causation and ground, and the problem spaces for both notions, are more similar than those of asymmetry and irreflexivity. Intuitively, transitivity is a bedrock of both causation and of ground. Counterexamples to the transitivity of causation come in the form of thought experiments that yield counterintuitive results. To draw an example from Lewis (2000): a would-be assassin of Jane places a bomb under a desk, and Jane finds the bomb, thus causing her survival. Intuitively, the assassin's placing the bomb under the desk doesn't cause Jane's survival. Strategies for dealing with these cases include biting the bullet and accepting that Jane is a cause of the survival, denying that causation is transitive, or postulating a putative "mismatch" between causal features in the scenario.[22] A mismatch in causal features involves a particular caused feature failing to be a cause of another caused feature, even when general transitivity holds. Schaffer's counterexample to the transitivity of ground involves a dented sphere that has a determinate shape S*. Schaffer constructs the following syllogism:

> (1) The fact that o has a dent, d, grounds the fact that o has shape S.
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> (2) The fact that o has shape S grounds the fact that o is more-or-less spherical.
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> (3) Therefore, the fact that o has a dent grounds the fact that o is moreor-less spherical. The sphere having S* grounds its being near spherical, but the dent does not ground the sphere being near-spherical.

The structure of the bomb and dented sphere counterexamples is importantly different. As Mason (ms) and Jessica Wilson (forthcoming) have pointed out, the dented sphere example involves two different little-g grounding relations: one of mereological dependence (in the case of the dented sphere and the shape) and the other a determinate/ determinable relationship (in the case of the relationship between the sphere's shape and its more-or-less sphericality). There is no analogous structural difference to be made for causal transitivity: though the bomb case involves a mismatch in causal features, it does not involve two different sorts of causal relations. Nonetheless, counterexamples to

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[22] See Paul (2000) for this latter diagnosis.

transitivity effect causation and grounding in similar ways, and solutions (including redescription and finer-graining of the *relata*) tend to be similar. The similarity of the problems about transitivity and grounding is not itself sufficient to support the grounding/ causation analogy, however. And it is particularly not so given the myriad other structural differences between them.

Grounding is also *hyperintensional* whereas causation is generally not taken to be so.[23] A notion is hyperintensional if necessarily extensionally equivalent entities cannot be intersubstituted *salva veritate*. For example: Lois can believe that Superman is brave but fail to believe that Clark Kent is brave, even though Superman is wherever Clark Kent is. Similarly, extensionally equivalent grounds cannot be substituted *salva veritate*. Causation, in contrast, is not considered to hyperintensional: substituting extensionally equivalent expressions in causal expressions like "a causes b" generally preserves truth value. Further investigation might make a case for the hyperintensionality of causation, but it is not essential to the notion.

2.3 Dialectical Differences

Dialectical differences concern divergences in the debates about causation and grounding. In some sense, dialectical differences are merely sociological: they reflect patterns of arguments and counterarguments in each respective literature rather than all possible moves in the dialectical space. But some dialectical differences are philosophically telling: they reveal the implausibility of moves in one debate that might be made in another, or vulnerability in one kind of view not present in another. These differences can place pressure on Grinders who attempt to extend solutions from the causation debate to the grounding debate. They can also signal that the underlying phenomena are different.

One such dialectical difference is represented by the debate about big G Grounding versus little g grounding. A central controversy about grounding concerns whether, in Jessica Wilson's (2014) terminology, there is a distinctive relation, Grounding-with-a-capital-G, apart from other small-g-grounding relations such as

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[23] Though see Bernstein (2016a), which argues that omissive causation can by hyperintensional.

realization, composition, supervenience, and the determinate/ determinable relation. These "building relations" (as Karen Bennett calls composition, constitution, realization, and the like) are each viewed as doing a kind of grounding work. Why then, Wilson asks, must we believe in a distinctive notion of Grounding at all?

There is no directly parallel dialectical split for causation. One view in the area postulates countless distinct causal relations for every causative verb: punchings, cookings, drivings, and dancings are all examples of little-c causation, but there is no general determinable, Causation, under which each of these causatives is metaphysically united. But little-c causal relations do not have the same explanatory power as little-g grounders such as realization, composition, and constitution. And little-g grounding relations are presumably more joint carving than little-c causal relations: supervenience, the determinate/ determinable relationship, and realization imbue the world with weightier structure than single little-c causal instances of dancing, driving, and cooking.[24] Even if causes are united by the category of Cause and grounds are united by the category of Ground, little c causes are not directly analogous to little g grounders.

Jessica Wilson holds that so-called "bare grounding facts"—claims of the form "x grounds y"—are uninformative. In service to the grounding/ causation comparison, Schaffer notes that the same could be true of bare causal claims—claims of the form "x causes y"—but holds that it is not. This disagreement over informativeness signals a deeper divide than that over the explanatory power of grounding. For much of the debate over the nature of causation concerns which sort of substantive analysis can be given of the claim that x causes y. Counterfactual dependence, transfer of conserved quantity, lawful regularity, and nomological necessity are all substantive analyses of what is for something to cause something else. In contrast, ground is a theoretical primitive, and admittedly unanalyzable by most groundhogs. Though there are primitivists about causation, it is a minority view in the literature, whereas primitivism about grounding is canonical.

One obvious dialectical difference is that groundhogs feel compelled to illuminate their notion by appeal to causation in the first place. Causation theorists, in contrast, have not faced the same accusations of opacity and obscurity of their central analysandum, and

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[24] Jessica Wilson (forthcoming) argues for this point in detail.

so have generally not felt a need to appeal to some other notion in order to secure definitional transparency. Causation benefits from the variety of intuitive cases and puzzles that drive the debate forward, as well as the ease with which causal intuitions can be elicited.

In response, a groundhog might claim that grounding has analogous intuitive cases and puzzles, and that it's a contingent sociological fact that grounding intuitions are not as easily elicited as causal intuitions. If people were as trained in grounding talk as they were in causal talk, this line of thinking goes, grounding intuitions could be elicited as naturally as causal ones. But this is a tough sell. Before philosophical education about grounding, intuitions about things making up other things are not much more than basic compositional ones. And philosophical education about grounding doesn't help much. It adds formal tools rather than intuitive content. Even if groundhogs do not have to appeal to causation to illuminate their notion, the intuitiveness of causation versus the opacity of ground signals an important difference.

The grounding literature is still in its early days, but the development of the literature will bring with it more revealing dialectical differences between grounding and causation. Other probable dialectical divides include characterizations of metaphysical laws versus natural laws; the modes of presentation of grounding versus causation; the context invariance of grounding versus the context sensitivity of causal claims; and the a priori discoverability of grounding claims versus the a posteriori nature of causal claims.

3.0 Objections and Methodological Observations

Objection: Perhaps you've shown that grounding/ causation unity is false. But what's wrong with mere grounding/ causation comparison? Comparisons come cheap.

Reply: It is true that many of the preceding points have more force against grounding/ causation unity than mere grounding/ causation comparison. And theorizing about causation and grounding in the same breath should not be forbidden. Comparisons can sometimes illuminate both phenomena when the phenomena are radically different. "Juliet is the sun" provides information about both Juliet and the sun. But after a certain

point, the comparison becomes an exercise in how much each notion can be expanded to be more like the other.

It is the appeal to causation as a way to <u>illuminate</u> ground, given the supposed mysteriousness of the notion of ground, that is the focus of the worry. Enough differences between causation and grounding degrade the usefulness of the comparison despite its surface appeal. Obviously, there is not a specific number of differences on the scoreboard that signal when a comparison is useful versus not useful. Garner enough basic differences, though, and the comparison begins to look more like a very loose resemblance than a line of theorizing that bears explanatory fruit.

Objection: all you've shown is that *some* cases of causation, particularly strange cases of causation, are not like some cases of grounding. But if the grounding/ causation analogy holds most of the time, it is still theoretically useful.

Reply: Here I stand my ground (as it were). The devil is in the details. Cases of "weird causation" are not confinable to the theoretical sidelines. First, though these cases are strange, they are ubiquitous: there are cases of causation by omission and causal preemption everywhere. Second: the past two decades of work on causation has largely focused on what outré cases of causation such as preemption, overdetermination, and causation by omission have to teach us about causation more generally. For example, preemption and overdetermination are thought of as defeating the simple counterfactual approach to causation, as well as violating the intrinsicality of causation in that account. Energy transfer accounts of causation are thought to be inadequate owing in part to their inability to handle cases of causation by omission. To ignore these problem cases of causation is to ignore the special corners and features that make causation unique.

It is also hard not to see this kind of objection as an admission of guilt, distillable into "Our comparison method works, except when it doesn't." Whatever one's views on metaphysical methodology, this sort of admission should be enough to cast doubt, at least, on this method. When the procedure becomes focused on how and when to ignore the exceptions, the exceptions have proven their point.

As discussed in section 2.3, one popular challenge to grounding concerns whether

or not it is *unitary*, or whether or not there is a single capital G Grounding notion that substantively unites smaller grounding relations. Even if all I have shown is that some cases of causation are not like some cases of grounding, this result issues a challenge to the univocality of ground: its key illuminating comparison, causation, applies to some cases and not others. This creates a new explanatory burden for the proponent of ground: to show why it holds in some cases and not others.

Objection: theoretical unity is preferable to theoretical disunity. All things considered, it's better to hold the same views about causation and grounding than to hold different things about both.

Reply: theoretical unity is preferable to disunity <u>if</u> the two theoretical posits are suitably similar. But causation and grounding are dissimilar enough to outweigh the explanatory benefit of unifying the notions.

Theoretical unity, moreover, isn't necessarily an <u>overriding</u> theoretical virtue. It is pro tanto better to have a unified view. But that's one consideration among many. Eternalists about time shouldn't be committed to modal realism, even though both views posit maximal being. And presentists need not be actualists, even though both views posit minimal being. Similarly, believers in causation need not be committed to the same features about ground.

Despite the preceding reasons and examples, it seems clear that Grinding will remain a dominant strategy for the time being. It is surely possible to come up with accounts of causation and grounding that match on most relevant features. But these accounts are not otherwise appealing. These sorts of moves extend each notion beyond its conceptual and functional foundations. One reason that causation is widely accepted as a theoretical posit is that it plays a unique and useful role in our theorizing. And one reason that grounding has become so popular is that it promises to explain a wide variety of phenomena. But stretching either of these concepts to fit the other is not necessarily a way to illuminate them, and especially not a way to illuminate grounding. Like attempts to draw parallels between space and time, or between composition and identity, such a project should be undertaken with the goal of preserving the uniqueness and theoretical

usefulness of either notion. Theoretical unity is not beneficial if it dissolves the previously independent notions into a single mixed one—especially if the notions turn out to be more different than expected.

4. Conclusion

Grounding skepticism has largely focused on challenging the univocality, usefulness, and explanatory power of grounding. Here I have issued a new challenge to grounding: that it cannot be illuminated by appeal to the familiar notion of causation. Perhaps groundhogs will find a new notion to which to appeal in order to illuminate ground, or perhaps grounding skeptics will be satisfied with another methodological route to securing a transparent notion of ground. But attempting to use causation as a guide to ground emphasizes similarities that turn out to be superficial, while ignoring the intricacies that genuinely characterize each notion. Groundhogs should not be Grinders: they need another path forward.[25]

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