

An Anti-reductionist Account of Singular Causation

When it comes to the conceptual analysis of causation, no one theory or group of theories enjoys widespread acceptance in the philosophical community. It is generally acknowledged that counterfactual and probabilistic accounts of causation are subject to serious objections, at least when they are offered as reductive conceptual analyses. Process or transference accounts—again, if offered as reductive conceptual analyses—also face major difficulties.¹ Given the prolonged failure to uncover a successful reductionist conceptual analysis of causation, anti-reductionist accounts can become attractive. Perhaps the reason that we haven't yet found a successful reductionist analysis, the thinking goes, is simply that there isn't one to be found—perhaps causation is primitive. What is more, an account which posits a primitive relation of causation between particulars can handle many of the cases that cause so much trouble for reductive accounts. Yet the move toward primitivist or anti-reductionist accounts is resisted by many philosophers. After spelling out his reductive analysis of productive causation, for example, Ned Hall writes:

I do not mean to pretend for an instant that the analysis I have offered stands in no need of detailed elaboration or defense. Of course it does. But that task can be left for another occasion, since my aim here is quite modest: I mean only to make it at least somewhat plausible that a reductive analysis of production can be had—thereby blocking the objection that once we distinguish production and dependence...we will be stuck with “production” as an unanalyzable causal primitive. That would indeed be unfortunate.²

Hall's antipathy to unanalyzable causal primitives is not uncommon. What is less common is the marshalling of arguments backing this sort of antipathy. Arguments against anti-reductionist positions are comparatively³ rare and typically rather brief. In this paper, I want to defend a particular anti-reductionist (and singularist) view against several objections.

¹ See, e.g., Ned Hall, “Causation,” in *The Oxford Handbook of Contemporary Philosophy*, eds. Frank Jackson and Michael Smith (New York and Oxford: Oxford U.P., 2005).

² Hall, “Two Concepts of Causation,” in *Causation and Counterfactuals*, eds. J. Collins, N. Hall, and L.A. Paul, pp. 225-276 (Cambridge, MA: The MIT Press, 2004), p. 265.

³ Compared to the vast array of arguments directed against this or that reductionist view.

In section one, I try to sort out the meanings of several terms that tend to do similar work in the literature: non-reductionism, anti-reductionism, singularism, and primitivism. Distinctions that arise in the course of that discussion will help me sketch an anti-reductionist account that can withstand extant objections to anti-reductionism. In section three, I consider an epistemological objection to anti-reductionist theories that can be traced back to Hume. In section four, I consider an epistemological objection of Ned Hall's. Section five involves a close look at an argument of David Lewis's against a particular brand of primitivism. And in section six I take up a second objection of Ned Hall's, this time about the relationship between causation at different levels of description (e.g. microphysical and macrophysical levels).

I. Anti-reductionism, singularism, and their neighbors

The project of assessing non-reductionist accounts of causation is made more difficult by the presence of several over-lapping but non-identical terms employed to contrast various non-reductionist views from their reductionist rivals. In this section I'll try to sort out the meanings of these terms, namely: anti-reductionism, non-reductionism, primitivism, and singularism.

John Collins, Ned Hall, and L.A. Paul explain the distinction between reductionist and anti-reductionist accounts of causation as follows:

Probably the most useful distinction [amongst philosophical accounts of causation] to make at the outset is that between accounts that do and accounts that do not attempt to *reduce* causal facts to facts about what happens, together with facts about what the laws are that govern what happens. (We have a permissive sense of "what happens" in mind: It is to include facts about what objects exist where and when, and what categorical properties and relations they instantiate.) ... We will henceforth label "reductionist" any positions according to which causal facts can be reduced to categorical plus nomological facts, and label "antireductionist" any position that denies this claim.⁴

⁴ Collins et al., "Counterfactuals and Causation: History, Problems, and Prospects," in *Causation and Counterfactuals*, p. 12. The careful reader may notice an ambiguity in this passage. In the first sentence, the focus is on a distinction between [1a] "accounts that do and [1b] accounts that do not attempt to *reduce* causal facts to [categorical and nomological facts]." In the last sentence, the distinction is between [2a] accounts "according to which causal facts can be reduced to categorical plus nomological facts," and [2b] accounts which deny the claim that causal facts can be reduced to categorical plus nomological facts. These are in fact different distinctions. For consider an account of causation which does not reduce facts about causation to non-causal facts (it might leave a causal primitive in the analysis), but yet does not go so far as to deny that such a reduction can be made (the question of whether the remaining causal primitive can itself be reduced would be left open). Such an account would fall under category [1b]—as it does not attempt to reduce causal facts to categorical plus nomological facts—but would not fall under category

Causal facts are facts about what causes what, e.g. the fact that Billy caused the shattering of the window, or the fact that neuron *c* caused the firing of neuron *e*. Nomological facts are facts expressing the laws of nature, like the fact that negative charges repel each other, or the fact that the strength of the gravitational force between two objects is inversely proportional to the square of their distance.⁵ Categorical facts are non-modal facts about the (non-modal) properties and behavior of things, like the fact that the Moon is now moving relative to the Earth, or the fact the Statue of Liberty is on Liberty Island.

Following the last sentence of the Collins *et al.* quotation reproduced above, let us say that,

- (R) A reductionist account of causation is one according to which all causal facts can be reduced to categorical plus nomological facts, while an antireductionist account of causation is one which denies the claim that all causal facts can be reduced to categorical plus nomological facts.

The concept of “reduction” is obviously central here, and we might wonder what exactly it amounts to. As it turns out, reduction is not just supervenience. Perhaps in some contexts, to say that a fact *F* reduces to some set of other facts might merely mean that *F* supervenes on those other facts. But for Hall, at least, this is not what is meant by “reduction” in the present discussion.⁶ As Hall points out, the notion of supervenience does not entail asymmetry, while the relevant notion of reduction does.⁷

[2b]—since it does not go so far as to deny that such a reduction can be made. I’ll resolve this ambiguity by the way in which I define “anti-reductionism” and “non-reductionism” below.

⁵ What is at issue, more precisely, are the *fundamental* laws of nature, which may or may not include my two examples. See Collins et al., “Counterfactuals and Causation: History, Problems, and Prospects,” p. 1 and p. 13.

⁶ Ned Hall, “Causation,” in *The Oxford Handbook of Contemporary Philosophy*, p. 508.

⁷ To say that facts of type T1 supervene on facts of type T2 is to say that there can be no difference in the T1-facts without a difference in the T2-facts. So understood, the supervenience relation is not necessarily asymmetrical: it is possible for T1-facts and T2-facts to supervene on each other. The notion of reduction that reductionist theorists of causation are after, by contrast, is asymmetrical. The proposition that causal facts are reducible to categorical plus nomological facts by itself implies that categorical plus nomological facts are not reducible to causal facts.

Another reason to distinguish reduction from supervenience: Suppose that causal facts supervene on categorical and nomological facts, so that we couldn’t have a change in the causal facts without a change in the categorical and nomological facts. It still might be the case that any given causal fact *F* is something over and above the facts upon which it supervenes. That is, it is consistent with the supposition of

If reduction is not supervenience, what is it? To bring the concept into clearer focus, consider an example. Suppose it is a fact (F) that Ken is a bachelor. It seems right to say that there is nothing to this fact over and above the facts that (F1) Ken is a male human being, (F2) Ken is unmarried, and (F3) Ken is of marriageable age. Given that F1, F2, and F3 obtain, nothing more need be posited in reality for it to be true that F obtains. We could even say that facts F1, F2 and F3 constitute or make up fact F.

I'll take this example as a paradigm of fact-reduction. To say that one fact is reducible to a set of other facts is to say that the set of other facts is "all there is" to the first fact, which means that if the set of other facts all obtain, then nothing more need be posited in the ontological structure of reality for it to be the case that the first fact obtains. Where fact F is reducible to facts F1-Fn, F1-Fn make up or constitute F, and the obtaining of F *just is* the obtaining of F1-Fn.⁸

The contrast between reductionism and anti-reductionism presupposes a distinction between basic (or primitive) facts and derived facts. Derived facts are facts that are reducible to other facts. Basic facts are facts that are not reducible to other facts. The idea seems to be that some facts are reducible to other more foundational facts, and that these in turn are at some point reducible to basic facts, which are themselves not further reducible. (The only other option requires us to posit an infinite regress of fact-reduction.) The core of the disagreement between the anti-reductionist and the reductionist, then, is a disagreement about what facts are basic. According to the anti-reductionist any causal fact is either basic, or reducible only to sets that include some causal facts. Given the assumption that there are no infinite regresses of fact-reduction, this implies that at least some causal facts are basic. According to the reductionist, causal facts are never basic—all causal facts are reducible to non-causal facts. So an anti-reductionist might be comfortable thinking that (F) the fact that electron one causes electron two to move is a basic fact. A reductionist would have to hold that F is reducible to some set of non-

supervenience that causal facts are additional, emergent facts about the world. In that case it would be somewhat misleading to say that we can "reduce" causal facts to categorical and nomological facts.

⁸ I use "constitute" in the ordinary language sense, as a synonym for "make up".

causal facts (e.g. to the facts that (F1) electron one exists, (F2) electron two exists, (F3) electrons one and two are in close proximity, and (F4) the fact that electron two moves follows from the occurrence of F1-F3 together with the laws of nature).

Having examined what is meant by “anti-reductionism,” we can now turn to “non-reductionism.” This term is sometimes used interchangeably with “anti-reductionism,” as a synonym.⁹ It is, however, worthwhile to distinguish the two, so I will define “anti-reductionism” as in (R), and use “non-reductionism” to describe a theory which does not attempt to reduce causal facts to categorical plus nomological facts. It is one thing to deny that such a reduction can be made (as does an anti-reductionist theory); it is another to simply not attempt such a reduction (non-reductionism). One can imagine a philosopher offering an account of causation which does not reduce facts about causation to non-causal facts (it might leave a causal primitive in the analyzing phrase¹⁰), but yet does not go so far as to deny that such a reduction can be made (the question of whether the remaining causal primitive can itself be reduced would be left open). Such an account would be neither reductionist nor anti-reductionist according to (R); it would appropriately be labeled non-reductionist on the current suggestion.

“Primitivism” is sometimes used to name the view that the relation of causation is primitive and unanalyzable. As Jonathan Schaffer has pointed out,¹¹ we might profitably distinguish between conceptual primitivism and ontological primitivism. One can develop Schaffer’s suggestion as follows: a given concept C is *not* conceptually primitive just in case it can be given an adequate conceptual analysis that includes no reference to C (or a concept equivalent to C, or a concept that is itself analyzed in terms of C) in the analyzing phrase. Bachelorhood, for example, is not conceptually primitive, as it can be given this conceptual analysis: X is a bachelor iff (i) X is a male human being, (ii) who is unmarried, and (iii) who is of marriageable age. Conceptual

⁹ As in Hall, “Causation,” in *The Oxford Handbook of Contemporary Philosophy*, p. 510.

¹⁰ By “analyzing phrase” I mean the portion of the analysis of causation following the “iff”.

¹¹ At the Causation and Responsibility Roundtable, organized by Michael Moore and Richard Fumerton, Nov. 2006.

primitivism with respect to causation, then, is a view about our *concept* of causation, namely, the view that our concept of causation cannot be given an adequate conceptual analysis that includes no reference to causation (or an equivalent concept, or a concept that is itself analyzed in terms of causation) in the analyzing phrase.

By contrast, ontological primitivism with respect to some item or class of items is a view about those items themselves, not a view about our concepts. Say that ontological primitivism with respect to X is the view that X is a fundamental feature of reality, in the sense that X cannot be reduced to some set of more basic entities. Ontological primitivism with respect to causation, then, would be the view that the relation of causation is a basic or primitive relation; it cannot be reduced to any other relation, or set of relations, or any other ontological items whatsoever.

While the notions of anti-reductionism and ontological primitivism cover much the same ground, the notion of primitivism is more fine-grained. Anti-reductionism is a claim about the whole class of causal facts; if even some subset of the class of causal facts is basic, then anti-reductionism is true. Primitivism gives us more precision when classifying theories, for it leaves room to say that one particular causal relation (say, production) is ontologically basic, while some other causal relation (say, causation by absences) is not. This greater precision will prove useful in section two.

An additional distinction that will be helpful is that between a relation and an instance of a relation. For example, talk about the being-to-the-left-of relation that obtains between object A and object B can be ambiguous between (i) talk about the particular instance of the being-to-the-left-of relation that obtains between A and B, and (ii) talk about the being-to-the-left-of relation itself. When the claim is made that causation is conceptually primitive, that claim is not best taken as a claim about our concept of a particular instance of some relation, but as a claim about our concept of the relation (be it understood in realist or nominalist terms). A claim about ontological primitivism, by contrast, could be made either about an instance or the relation itself. An anti-reductionist partial to the metaphysics of tropes (particularized properties and relations)

might hold that each individual instance of some causal relation is ontologically primitive. An anti-reductionist partial to platonic realism might hold that some causal relation itself is ontologically primitive.

Finally, singularism. A singular causal statement is a statement which expresses a causal relation between particulars (usually, particular *events*), e.g. “John’s habit of smoking was a cause of his developing lung cancer.” A general causal statement is a statement which expresses a causal relation between relata described more generally, e.g. “Smoking causes cancer.”

The phrase “singular causation” is used somewhat differently by different authors. In its most basic sense, a relation of singular causation is just a causal relation whose relata are particulars. This is the sense in which I will use “singular causation” in this essay. It should be noted, however, that “singular causation” can also bear the more determinate meaning of “causation that does not exemplify a pattern captured in a law,” as in Richard Swinburne.¹² In my view, this use of the term unnecessarily restricts the meaning of “singularism.” A philosopher adopting a dispositionalist account of causation, who holds that laws are just summaries or descriptions of the ways in which the causal powers of things get exercised, might very well hold that there can be no singular causation that doesn’t fall under some law. (If there are any causal powers at all, then there will be some descriptions of how they manifest themselves, and every exercise of a causal power will fall under one of those descriptions...or so it might plausibly be thought.) But that same philosopher would be described by many philosophers as holding a

¹² Richard Swinburne, “The Argument from Laws of Nature Reassessed,” in *Debating Design: From Darwin to DNA*, eds. W.A. Dembski and M. Ruse (New York: Cambridge University Press, 2004), p. 308, n. 17. (See also the similar usage in M. Ramachandran, “A Counterfactual Analysis of Indeterministic Causation,” in *Causation and Counterfactuals*, eds. J. Collins, N. Hall, and L.A. Paul (Cambridge, MA: The MIT Press, 2004), p. 388.) In Swinburne’s case, talk of singular causation comes up in the context of a debate about what is more basic: (i) laws of nature or (ii) the causal powers or activities of particulars.

Michael Tooley has used the term “singularism” to express this same view: in his usage a singularist view of causation is a view of causation according to which there can be anomic causation, i.e. according to which there could be at least one singular causal relation that does not fall under a law.

For more on the distinction between singular and general causation, from a different sector of the literature on causation, see Christopher Hitchcock’s “Causal Generalizations and Good Advice,” *Monist* (April 2001) 84(2): 218-241, especially section 2, and section 6.3 of his entry “Probabilistic Causation”, *The Stanford Encyclopedia of Philosophy (Fall 2002 Edition)*, Edward N. Zalta (ed.), URL = <<http://plato.stanford.edu/archives/fall2002/entries/causation-probabilistic/>>.

singularist view of causation, insofar as she denies that causal laws are more basic than singular causal relations.

Accordingly, I will define a singularist theory of causation as a theory of causation according to which (i) there is a causal relation between particulars, and (ii) this relation is either more basic than, or at least not less basic than, general relations between types of events, like those expressed by laws of nature or regularities of succession. Singularist theories of causation deny that general relations between types of events (like the relation expressed in “Electrons repel other negatively charged particles”) are more basic than singular relations between particulars (like the relation expressed in “This electron is repelling that electron”). Singularism, finally, is just the thesis that some singularist theory of causation is true.

II. An anti-reductionist account of singular causation

In this section I try to sketch an anti-reductionist account of causation which can meet the challenges directed at various other versions of anti-reductionism. As a way of motivating the many distinctions made in this account, consider first a view we might call naïve anti-reductionism:

(NAR) Where C and E are actually occurring events, anytime we can say that C is a cause of E, there exists between C and E an ontologically primitive instance of the relation of singular causation.

Naïve anti-reductionism faces difficulties because it ignores the difference between direct and indirect causation (more on these terms below—for now: direct causation involves no causal intermediaries, indirect causation does). To see the problem, suppose that John drinks a cup of coffee and that this causes him to perk up. Call the event consisting in John’s drinking a cup of coffee “C” and the event consisting in John’s perking up “E”. Since we can truthfully say that John’s drinking a cup of coffee is a cause of his perking up, naïve anti-reductionism implies that there is an ontologically primitive instance of the singular causal relation between C and E. But this seems false—the causation between C and E is indirect causation, and can be ontologically reduced to a chain of intermediate causal relations. This is easiest to see if in fact the set of causal

intermediaries connecting C and E is finite. In that case, the relation between C and E is reducible to the set consisting of the instance of causation connecting C to the first intermediate cause, the instance of causation connecting the first intermediate cause to the second, . . . and so forth up to the instance of causation connecting the last intermediate cause to E. And even in a case where the causal chain between C and E is dense,¹³ it seems right to think that the causation between C and E can be ontologically reduced—once we have in place the dense causal chain between C and E, it is unnecessary to posit some ontologically primitive instance of causation which links C and E directly.

So naïve anti-reductionism has a problem with cases of indirect causation. To deal with this problem, and others like it, I'll introduce a more nuanced version of anti-reductionism. The account consists of claims about (i) the analogical character of causation, (ii) the core of the concept of causation, (iii) a paradigm type of causation: production, and (iv) other types of causation, viz., those involving absences. For ease of reference, I'll give this account the name of scholastic anti-reductionism (SAR).¹⁴

¹³ To say that the causal chain between C and E is dense is to say that between any two events in the chain, there is another event in the chain. This implies that where C is connected to E by a dense causal chain, there are in fact an infinite number of causes between C and E.

¹⁴ The account I offer is influenced by Aquinas and Suarez, hence the name. SAR might also be described as broadly Aristotelian. In his insightful discussion of the key differences between Aristotelian and empiricist accounts of causation, Alfred Freddoso identifies three theses characteristic of Aristotelian accounts of causation. The first is a thesis about primitivism: "causality cannot be analyzed reductively by means of non-causal concepts; hence, one or more causal primitives will figure prominently in any correct account of causality." The second thesis concerns causal powers (among other things): "the fundamental explanatory principles of natural phenomena are ontologically grounded in natural substances themselves. Though there is some disagreement here among contemporary neo-Aristotelians about how exactly to think of this grounding, I will take for granted the scholastic view that it includes both formal causal structures (Aristotelian formal causes) and irreducible causal powers and tendencies that are tied to those structures." The third is a singularist thesis: "singular causal facts are metaphysically prior to more general causal facts such as regularities (or uniformities or so called 'laws of association')." [Alfred Freddoso, "Introduction" in Francisco Suarez, S.J., *On Creation, Conservation, and Concurrence: Metaphysical Disputations 20, 21, and 22*, trans. A.J. Freddoso, lix-lx (South Bend, IN: Saint Augustine's Press, 2002).] The version of anti-reductionism I present here endorses the first thesis and is apt to be developed in ways consistent with the second and third theses.

The first essential claim of scholastic anti-reductionism is that the concept of a cause, and hence the concept of causation, is an analogical and somewhat vague concept. Second, the core of the concept of causation is derivativeness. As Anscombe puts it:

[C]ausality consists in the derivativeness of an effect from its causes. This is the core, the common feature, of causality in its various kinds. Effects derive from, arise out of, come of, their causes.¹⁵

Where Anscombe uses “derive from, arise out of, come of”, we might also use “come from” – effects come from their causes. Or we could put it in Aquinas’s way: a cause is a source of the being of its effect.¹⁶ Given what Aquinas means here by being (*esse*), this is roughly equivalent to the claim that a cause is either the source of the entire existence of the effect, or the source of some aspect of the effect, e.g. the fact that it has some particular property or feature. The crucial idea here for our purposes is the notion of a *source of being*, which, I take it, is another way to express the idea that effects come from or derive from their causes. All these glosses on the concept of derivativeness are not meant to conceptually analyze derivativeness in terms of something else—on scholastic anti-reductionism, the basic idea at the heart of causation, namely, the idea of derivativeness, is conceptually primitive.

Third, a paradigm type of causation is production, or productive causation. By “production” I mean to pick out a type of causation which Ned Hall has contrasted with mere counterfactual dependence, a type of causation which we evoke “when we say of an event *c* that it helps to *generate* or *bring about* or *produce* another event *e*”.¹⁷ Production is close to what Aquinas would have called *per se* efficient causation. The following cases are examples of production: a fire causes water to be heated; a massive object produces motion in some other object with mass; parents generate a new human being; God creates the universe *ex nihilo*.

¹⁵ G. E. M. Anscombe, “Causality and Determination,” in *Causation*, eds. Ernest Sosa and Michael Tooley (New York: Oxford University Press, 1993), pp. 91-2 in reader from conference.

¹⁶ “Every cause is related as a principle [read: source – MR] to the being of its effect” [*Scriptum super Sententiis*, M.F. Moos, ed. (Paris, 1947), 1.29.1.1c]. And again: “The name ‘principle’ expresses a relation of origin absolutely, but the name ‘cause’ expresses a relation of origin with reference to the being of the thing which proceeds from the cause” [*Scriptum super Sententiis* 3.11.1.1 ad 5].

¹⁷ Hall, “Two Concepts of Causation,” p. 225.

Production comes in two varieties: direct and indirect. The concept of production is conceptually primitive. We can define direct and indirect production in terms of production and one additional notion—the notion of causing something *by* causing something else. I take it that we have some grasp of what it means to bring about or produce an effect E by bringing about some distinct effect, which in turn brings about E. For example, I can bring it about that the window breaks by bringing it about that a stone is hurtling through the air towards the window. To put the point in terms of event-causation, the event which is my throwing the stone (C) is a productive cause of (E) the breaking of the window, on account of being a productive cause of (M) the stone’s hurtling through the air in the direction of the window. That said, we can define indirect production as follows:

- (IP) An event C is an indirect productive cause (or producing cause) of an event E iff C is a productive cause of E, on account of being a productive cause of some event M, which is itself a productive cause of E.¹⁸

Direct production is then defined as:

- (DP) An event C is a direct productive cause of an event E iff C is a productive cause of E, but not on account of being a productive cause of some event M, which is itself a productive cause of E.¹⁹

As noted above, production is conceptually primitive. But there is more to say than this.

While direct production is not conceptually primitive (it can be analyzed in terms of production, as above), any instances of the relation of direct productive causation are ontologically primitive,

¹⁸ Two comments: First, note that the definition of indirect production will apply in cases where C and E are connected by a finite causal chain *and* in cases where C and E are connected by a dense causal chain. If indirect production were instead defined in terms of chains of direct causation (as in: X is an indirect productive cause of Y iff X is linked to Y by a chain of direct productive causes), there would be a problem concerning possible worlds where all chains of production are dense. There would be no direct production in such a world. And on the proposed alternative definition of indirect production, there would be no indirect production. So the proposed alternative definition would deliver the incorrect result that there is no production in such a world. The way indirect production is actually defined avoids this problem.

Second, I have defined the relation of indirect productive causation using the language of event-causation. The relation could be defined similarly for agent-causation or fact-causation.

¹⁹ One caveat: to account for the possibility that God could be causally related to an effect both directly and via intermediaries, it is better to define direct production as follows: “An event C is a direct productive cause of an event E iff C is a productive cause of E, but not, *or not just*, on account of being a productive cause of some event M which is itself a productive cause of E.” This adjustment won’t be of service in any issue in this paper, though, so I will leave it aside as an unnecessary complication.

which is to say that instances of the direct production relation are a fundamental feature of reality; they cannot be reduced to some set of more basic entities. Like direct production, indirect production can be given a conceptual analysis in terms of production. But unlike direct production, indirect production is not ontologically primitive. Where C is an indirect productive cause of E, the relation between C and E can be reduced. Where the causal chain between C and E is not dense, the relation between C and E can be reduced to the set of instances of direct production that link the members of the causal chain between C and E. Where the causal chain between C and E is dense (if in fact there are such cases), the relation between C and E is somehow a matter of the “shorter” relations between C, all the intermediate causes, and E (though exactly how this reduction will go is not entirely perspicuous).

Given all this, it’s clear that scholastic anti-reductionism is indeed an anti-reductionist account. For facts about instances of the direct production relation are, of course, causal facts, and SAR denies that such facts can be reduced to categorical plus nomological facts (since SAR denies that such facts can be reduced to anything). On SAR, then, some causal facts are basic.

SAR is also a singularist account of causation. Since the instances of the direct production relation are primitive, we can say that the relation of direct causal production is not less basic²⁰ than general relations between types of events like causal laws or regularities. Add to this the fact that SAR asserts that there are causal relations between particulars, and it follows that SAR counts as a singularist account.

Thus far I have described the essential features of the anti-reductionist account I have in mind. But some additional claims should be added concerning types of causation other than production.

²⁰ SAR could be developed in two directions, one according to which causal laws and instances of direct production are in some sense equally basic, and another (akin to the theories of Brian Ellis and Nancy Cartwright) in which the causal laws are mere descriptions or summaries of the ways in which causal powers get exercised. On this second way (more congenial to actual scholastic views of causation), causal laws would be derived while instances of direct production would be primitive. The task of spelling out the relation between causal powers and instances of direct production can be left for another occasion.

There are many types of causation in addition to direct and indirect production. Suppose, for example, that Jill pulls an oblivious Jack out of the way of an oncoming bus. In some linguistically acceptable sense of the word, Jill's action is a *cause* of Jack's not being hit by the bus. The cause here is a positive event (Jill's action, i.e. the event of Jill's pulling Jack). But, at least at face value, the effect is a so-called negative event (Jack's not being hit by the bus), which is just to say that the effect is an absence of a certain sort of positive event (a Jack's-being-hit-by-the-bus sort of event). Now, an absence does not exist, properly speaking, and for this reason any sense in which it is produced is a different sense than the sense in which some positive event is produced in a case of production. So while there is reason to think some type of causation is at play here, there is also reason to think that it is not ordinary production. Call it causation of an absence.

There can also be causation *by* an absence. Suppose that Jack (on some other day) is waiting to catch the bus, but his inattention causes him to miss it. That is to say, his lack of attention (an absence) causes him to not get on the bus (another absence). Because an absence is not an actually existing thing, it is not fit to do any producing. But the way we use language suggests that we are comfortable applying some concept of causation to cases of causation by an absence.

And there are cases where causation of and by absences gets linked together to form various sorts of chains. Suppose²¹ Jill hides Jack's insomnia medication, causing him to not be able to find it and thus to not be able to take it. Jack's failure to take his medication then causes him to be awake all night. Here we have a positive event (Jill's hiding the medicine), which is a cause of an absence (Jack's failing to take his medication), which is in turn a cause of a positive event (Jack's

²¹ To adapt an example of Phil Dowe's, from "Causes are Physically Connected to their Effects: Why Preventers and Omissions are not Causes," in Christopher Hitchcock (ed.), *Contemporary Debates in Philosophy of Science* (Malden, MA: Blackwell Publishing, 2004), p. 190.

lying awake all night).²² Though this case is not a case of indirect production, it is, on SAR, a case of indirect causation.

The claim that causation is an analogical concept allows us to say (with Jonathan Schaffer)²³ that such cases do count as causation. But because the other sorts of causation are in various ways ontologically derivative (as compared to the ontologically basic relation of direct production), we can say that they are not cases of the most metaphysically central type of causation (production).

If causation is analogical, so that there are several different types of causation, we might well ask what unifies the different types, such that they are all types of *causation*. One could go several different ways at this junction; I'll consider two. First, one might develop a suggestion of Anscombe's, who asserts that derivativeness "is the core, the common feature, of causality in its various kinds."²⁴ Perhaps all we need to do, to explain the unity of the concept of causation, is to point out that all the types of causation have derivativeness in common. One billiard ball's motion is *from*, or is due to, the impact of another ball; Jack's insomnia comes *from* his failure to take his medication; Jack's missing the bus is *from* his inattention. While the sense or way in which the effect is from the cause differs in the different cases, there is nevertheless a commonality here, and we evidently have the ability to discern the presence of that commonality.

Or perhaps we should say more, following a suggestion of the late medieval philosopher Francisco Suarez. Discussing the connection between what he calls *per accidens* efficient causes and *per se* efficient causes, Suarez asserts that "a *per accidens* cause is not a true cause but is instead called a cause because of some relation or similarity to a cause or because it is conjoined

²² For an excellent discussion of the different sorts of causation involving negative events, see the work of Phil Dowe: in addition to the work cited in the previous footnote, see his "A counterfactual theory of prevention and 'causation' by omission," *Australasian Journal of Philosophy* 79(2): 216-226, and chapter six of his *Physical Causation* (New York: Cambridge University Press, 2000). Dowe himself considers such cases to be cases of "quasi-causation" rather than causation.

²³ Jonathan Schaffer, "Causes need not be Physically Connected to their Effects: The Case for Negative Causation," in Christopher Hitchcock (ed.), *Contemporary Debates in Philosophy of Science* (Malden, MA: Blackwell Publishing, 2004), pp. 197-216.

²⁴ G. E. M. Anscombe, "Causality and Determination," p. 92.

with a cause.”²⁵ Adapting this thought, and being a bit more permissive about what we allow as a “true” cause, we might say this: types of causation other than production count as causes because of some relation or similarity to production.

How exactly would we then cache out the relations and/or similarities between production and other types of causation? Again, there are several options. To illustrate them, I’ll use our example of ordinary causation of an absence: Jill’s action (a positive event—call it “A”) is a cause of Jack’s not being hit by the bus (a negative event—call it “not-B”). Metaphysically, what’s going on is that A occurs, and produces a positive event E (say, Jack’s being moved to the sidewalk) which in the circumstances is sufficient for the non-occurrence of a B-type event (a Jack’s-being-hit-by-the-bus-type event).

A first way to cache out the link between production and ordinary causation of an absence is via their similar connections to counterfactuals.²⁶ In most cases of production, there are no back-up producing causes waiting in the wings, so that we have this relation between production and counterfactuals:

Usually, if C is a producing cause of E, then it follows that if C had not occurred, then E would not have occurred.

In cases like those of Jack, Jill, and the bus, we have a similar relation:

Usually, if A is a cause of not-B, then it follows that if A had not occurred, then not-B would not have “occurred.”²⁷

So “C is a producing cause of E” and “A is a cause of not-B” have the same relation to a certain sort of counterfactual. This similarity makes it suitable for us to consider ordinary causation of an absence to be a kind of *causation*. Other similarities relating to counterfactuals could likewise be pointed out to link the other types of causation involving absences to production.

²⁵ Francisco Suarez, *On Efficient Causality: Metaphysical Disputations 17, 18, and 19*, trans. Alfred J. Freddoso (New Haven, Conn.: Yale University Press, 1994), 17.2.2, p. 11.

²⁶ I’m helped here by Dowe’s work. See the references in footnote 22.

²⁷ The scare quotes are in place because not-B is a negative event. For not-B to not “occur” is just for some Jack-being-run-over-by-the-bus type event to occur.

A second way to cache out the link between production and ordinary causation of an absence is via agential manipulability. Typically, where C is a producing cause of E, a suitably positioned agent with the right powers who wanted E to occur could achieve that end by bringing about C. The same is true of ordinary causation of an absence: Typically, in cases where A is an ordinary-causation-of-absence cause of not-B, a suitably positioned agent with the right powers who wanted not-B to “occur” could achieve that end by bringing about A. This similarity makes it suitable for us to consider ordinary causation of an absence to be a kind of *causation*.

These two ways of explaining the connection between ordinary causation of an absence and production aren’t opposed, of course—the same theory might employ them together. And there are other connections that could be employed as well. We might even use a sort of recipe for linking production and cases of causation involving absences: (i) pick one of what are sometimes called the conceptual connotations of causation (counterfactual dependence, statistical relevance, agential means, grounds for evidence, grounds for explanation, and moral responsibility),²⁸ (ii) show that production has a distinctive relationship to it, and then (iii) show that a given variety of causation involving absences has a similar relation to it.²⁹

Let that suffice as a brief explication of scholastic anti-reductionism. I now turn to a defense of this view. In what follows I examine four objections that have been raised against anti-reductionist or primitivist views. I’ll try to show that in each case the objection in question fails as an objection against SAR.

²⁸ This list is from Jonathan Schaffer, “Causes need not be Physically Connected to their Effects: The Case for Negative Causation,” p. 199.

²⁹ Phil Dowe has made a similar point (though for a different purpose): “[C]ausation and quasi-causation [Dowe’s preferred name for what I am calling causation involving absences] play very similar practical roles. Negatives (negative facts or events), when they figure in quasi-causation, can be ends and means, and can raise chances. As well as serving as means and ends, since they raise chances they can be evidence for their quasi-effects and quasi-causes, and the can also feature in explanation. Arguably, quasi-causation may also, subject to ‘pragmatic’ considerations, track moral responsibility in just the way that causation does.” [“Causes are Physically Connected to their Effects: Why Preventers and Omissions are not Causes,” p. 194]

III. The unobservability argument against primitivism

The first objection, epistemological in nature, is due to Hume. Jonathan Schaffer summarizes it as follows:

[This argument] traces back to Hume and maintains that primitivism conflicts with the existence of causal knowledge. After all, one might argue in a Humean vein, all we can observe is sequences of events; as such, we could never come to know any facts about causal connection if connection is anything over and above such sequences.³⁰

In this section I'll examine whether there is anything suggested by this argument that would count as an argument against SAR.

To better understand the argument, begin by considering the Humean claim that causation is just regular succession (X is a cause of Y iff Y follows X, and things like Y regularly follow things like X). If causation is just regular succession, it is easy to see how we could have causal knowledge. For we can observe, and therefore know, that Y occurs after X occurs. We can also observe, and therefore know, that things like Y occur after things like X. And if causation is just regular succession, knowing those facts is sufficient for knowing that X is a cause of Y.

(Compare: knowing that Ken is a male of marriageable age and knowing that Ken is unmarried is sufficient for knowing that Ken is a bachelor, because being a bachelor is just being an unmarried male of marriageable age.)

The objector isn't committed, of course, to the view that causation *is* regular succession—more complicated analyses of causation according to which causation is ontologically reducible will afford the same sort of explanation of our ability to attain causal knowledge. We can know facts of the form “X is a cause of Y” because we can observe the sorts of facts to which facts of the form “X is a cause of Y” can be reduced.

In contrast, according to the objector, causal knowledge would elude us if causal facts were not reducible. Presumably, the reason for thinking this has to do with (i) a commitment to the

³⁰ Jonathan Schaffer, "The Metaphysics of Causation", in *The Stanford Encyclopedia of Philosophy (Spring 2003 Edition)*, ed. Edward N. Zalta, section 2.1, URL = <http://plato.stanford.edu/archives/spr2003/entries/causation-metaphysics/>.

view that our knowledge must be based on what we observe, and (ii) the belief that causal facts are not themselves directly observable. The objector then concludes that, because we do indeed have causal knowledge, it must be the case that causation is ontologically reducible.

This line of thinking suggests the following argument against SAR.

- (1) We could never come to know any facts of the form “X is a productive cause of Y” unless either (a) such facts were themselves observable, or (b) such facts were reducible to facts that are all observable.
- (2) But we can sometimes come to know facts of the form “X is a productive cause of Y.”

Therefore,

- (3) Facts of the form “X is a productive cause of Y” are either (a) themselves observable, or (b) reducible to facts that are all observable.
- (4) Facts of the form “X is a productive cause of Y” are not themselves observable.

Therefore,

- (5) Facts of the form “X is a productive cause of Y” are reducible to facts that are all observable.
- (6) But, if SAR is correct, some facts of the form ‘X is a productive cause of Y’ are reducible to sets of facts including facts of the form ‘X is a direct productive cause of Y’, and facts of the form ‘X is a direct productive cause of Y’ are neither observable nor further reducible.³¹

Therefore,

- (7) If SAR is correct, some facts of the form ‘X is a productive cause of Y’ are not reducible to facts that are all observable, which contradicts (5).

Thus,

- (8) SAR is not correct.

Call this the unobservability argument. The crucial premises are (1) and (4). Take (4).

Suppose I see you kicking a soccer ball, and see the soccer ball straightaway move off in the

³¹ “X” and “Y” are being used as placeholders here, and do not necessarily refer to the same particular events in the phrase “facts of the form ‘X is a productive cause of Y’ ” and the phrase “facts of the form ‘X is a direct productive cause of Y’ ”. That is, “facts of the form ‘X is a productive cause of Y’ ” should be taken as equivalent to “facts of the form ‘ ____ is a productive cause of ____ ’ ”.

direction you kicked it, and come to know that your kick caused the soccer ball to move.³²

Consider the fact that your kick causes the soccer ball to move. What does it mean to assert, as (4) says we must, that this fact is not itself observable? Surely I come to know that fact on the basis of observation, in some sense. I come to know that your kick is a cause of the ball's movement by watching, by observing. The objector owes us an explanation of the meaning of "observable" which will elucidate his claim that we can't observe facts of the form "X is a productive cause of Y", given that it certainly seems that I can see you cause the soccer ball to move.

The neo-Humean objector is likely to make a distinction at this point: Issues of skepticism aside, we can come to know certain causal facts when we observe certain things. But while we do observe, say, the event which consists in your kicking the ball and the event which consists in the ball's movement, we do not observe the causal *connection* between the two. We see your kick, and the ball's movement, but we do not see your kick's *causing* the ball's movement. We do not observe the connection between the two events, only the sequence of the events.

To put the matter somewhat differently, the fact that your kick is a cause of the ball's movement is not itself contained in my perceptual experience, in the way that the ball's color, shape, or position are. After all, the objector can point out, the perceptual content of my experience could be just as it is in the actual world, and yet it also be the case that your kick not be a cause of the ball's movement. (That is, I could be appeared to in just the same your-kicking-a-soccer-ball-and-it-moving way, and yet it be the case that your kick did not cause the ball to move.) For it is logically possible that I could have the same perceptual experience I have in the actual world, and yet because of some hallucination, or visual illusion, or because of some different cause of the ball's movement hidden from my senses, it be the case that your kick was not the cause (or even *a* cause) of the ball's motion. So it is possible that my perceptual

³² The person who makes an argument like that presented in (1)-(8) should not deny that I can come to know that your kick is a cause of the ball's movement. For this is just the sort of thing to which such a person commits in premise (2).

experience be the same in a world where your kick is not a cause as it is in a world where your kick is a cause. But then the fact that your kick is a cause of the ball's movement cannot be contained in the content of my perceptual experience.

This is a more nuanced position than the rather bold position expressed in (4). For the sake of argument, let's grant that it is correct. Causal facts like the fact that your kick is a cause of the ball's motion are not contained in the content of our perceptual experiences in the way that colors, shapes, and movements are.³³ Can this more nuanced position ground a cogent argument against SAR?

Presumably, such an argument would have to replace the claim that

(4) Facts of the form "X is a productive cause of Y" are not themselves observable, with a claim to the effect that facts of the form "X is a productive cause of Y" are not present in the content of our perceptual experience in the same straightforward way that colors, shapes, and movements are. Given that the bald claim that causal facts are unobservable is dubious, the objector needs to rely on some sort of distinction between what is directly observable and what is only indirectly observable (in virtue of being linked in the appropriate way to what *is* directly observable). Of course, it is up to the objector to make the concept of direct observability clear,³⁴

³³ We might also say: Causal facts like the fact that your kick is a cause of the ball's motion are not contained in the content of our perceptual experiences in the way that colors, shapes, smells, sounds, tastes, textures, and movements are. For the sake of simplicity and ease of exposition, I'll focus on visually experienced features—colors, shapes, and movements. But nothing about my argument will hinge on my exclusion of sounds, smells, tastes, and textures.

³⁴ It is the objector's responsibility to make the concept of direct observability clear because the objector's original argument is dubious if he relies on the oversimplified (4). It certainly seems that I can see you cause the soccer ball to move, in some sense, so the unqualified statement that "facts of the form 'X is a productive cause of Y' are unobservable" is dubious. Of course the objector does have a point—we don't observe that X causes Y in the same way we observe other things, like colors and shapes. But if the objector wants to make his argument convincing, he will have to replace the oversimplified and thus dubious (4) with something more plausible, something to the effect of "Facts of the form 'X is a productive cause of Y' are not directly observable." It is the objector whose argument relies on the notion of direct observability, and so it is the objector who needs to make that notion clear.

I say that it is the objector's argument that relies on that notion because, in responding to the objector's original argument I merely point out that (4) is dubious, because it certainly seems, for example, that I can see you cause the ball to move. The objector is the one who needs to introduce the concept of direct observability to explain more exactly what he means by (4).

but we can suggest the following on his behalf: Say that something is directly observable just in case it is present in the content of our perceptual experience in the way that colors, shapes, and movements are. With this distinction in hand, the objector could then try to reformulate his argument:

- (1)* We could never come to know any facts of the form “X is a productive cause of Y” unless either (a) such facts were themselves directly observable, or (b) such facts were reducible to facts that are all directly observable.
- (2)* But we can sometimes come to know facts of the form “X is a productive cause of Y.”

Therefore,

- (3)* Facts of the form “X is a productive cause of Y” are either (a) themselves directly observable, or (b) reducible to facts that are all directly observable.
- (4)* Facts of the form “X is a productive cause of Y” are not themselves directly observable.

Therefore,

- (5)* Facts of the form “X is a productive cause of Y” are reducible to facts that are all directly observable.
- (6)* But, if SAR is correct, some facts of the form ‘X is a productive cause of Y’ are reducible to sets of facts including facts of the form ‘X is a direct productive cause of Y’, and facts of the form ‘X is a direct productive cause of Y’ are neither directly observable nor further reducible.

Therefore,

- (7)* If SAR is correct, some facts of the form ‘X is a productive cause of Y’ are not reducible to facts that are all directly observable, which contradicts (5)*.

Therefore,

- (8)* SAR is not correct.

This argument does not suffer from the problems of its predecessor; for the sake of argument, we are taking (4)* as acceptable, whereas (4) was doubtful. But now there is a different problem.

The epistemological claim driving the argument is:

Now, I offer a suggestion of how to define the notion of direct observability, but if one thinks my suggestion is still too unclear for present purposes, then one should simply think that the revised version of the objector’s argument [(1)*-(8)*, below] is unclear. And an unclear objection is not a successful objection to SAR.

- (1)* We could never come to know any facts of the form “X is a productive cause of Y” unless either (a) such facts were themselves directly observable, or (b) such facts were reducible to facts that are all directly observable.

Why, we may ask, should we accept (1)*? (1)* seems to be an instance of a more general principle:

- (P) We could never come to know a fact F unless either (a) F were itself directly observable, or (b) F were reducible to facts that are all directly observable.

If (P) had a claim on our belief, then (1)* would too. But (P) is false. If (P) were true, we could not know that the external world has existed for more than five minutes. The fact (F1) that the world has existed for more than five minutes is not directly observable. The content of my perceptual experience could be just as it actually is, and yet it also be the case that the world popped into existence (false memories, light traveling from distant galaxies, fossils in the ground and all) four minutes ago. Nor does F1 seem to be reducible to facts that are all directly observable. For if F1 is reducible to other facts at all, one of the facts in the set of facts to which it can be reduced is surely (F1a) the fact that the world existed 5 minutes ago. But although F1a might have *been* directly observable five minutes ago, it is not directly observable in the present time.

By (P), it would therefore follow that we could never come to know that the world has existed for more than five minutes. I take this as a *reductio* of (P). If (1)* takes its epistemic credentials simply by being a special case of (P), then we now have an undercutting defeater for (1)*.³⁵ Now, there might be something special about causal facts, such that (1)* can be supported in a way that (P) cannot. But until some such other way of supporting (1)* can be found, (1)* remains unmotivated.

The argument I just gave against (P) relied on the claim that F1a (the fact that the world existed five minutes ago) is not directly observable, since F1a is not *now* directly observable. The

³⁵ By saying that we have an undercutting defeater for (1)* I mean to say that our only reason for believing (1)* has been undercut or removed. The rational thing to do, then, is to refrain from believing (1)*. For a brief discussion of the nature of defeaters, see Alvin Plantinga, *Warranted Christian Belief* (Oxford and New York: Oxford University Press, 2000), 359-366.

empiricist objector might resist this move, insisting that, in the relevant sense of “directly observable,” anything that was once directly observable continues to *count* as directly observable. To make things more precise, the objector might therefore want to replace (1)* with

(1)** We could never come to know any facts of the form “X is a productive cause of Y” unless either (a) such facts were themselves now or previously directly observable, or (b) such facts were reducible to facts that all are now or were previously directly observable.

(1)** seems to be a general instance of

(P)* We could never come to know a fact F unless either (a) F were itself now or previously directly observable, or (b) F were reducible to facts that all are now or were previously directly observable.

Unfortunately for the objector, (P)* is as flawed as (P). For consider the fact (F2) that our perceptual faculties are generally reliable. This fact is not itself directly observable, now or previously. The reliability of our perceptual faculties is just not the sort of thing that one can directly perceive. Nor does F2 seem to be reducible to facts that all are now or were previously directly observable. Perhaps F2 is reducible to the facts that (F2a) our visual faculties are generally reliable and (F2b) our tactile faculties are generally reliable, and (F2c) our auditory faculties are generally reliable, and so forth. But these sub-facts are not themselves directly observable. One does not directly observe that one’s vision, for example, is reliable. One directly observes colors, shapes, motions, and, in a slightly less direct sense, one observes objects. But one does not directly observe the fact that what one seems to see is usually really there, as one seems to see it.³⁶

If (P)* were true, then, we could not come to know that our perceptual faculties are generally reliable. If (as most of us believe) we do in fact know that our perceptual faculties are generally reliable, then (P)* is false. And thus we have no reason to accept (1)**.

³⁶ One might try to give an argument that one’s vision is reliable, based on knowledge derived from direct observation through one or more of the other senses. But such an argument would be circular as an argument that our perceptual faculties are reliable, because it would have to depend on at least one of our perceptual faculties to furnish some of its premises.

I have now considered two versions of the unobservability argument, and argued that each fails because each rests on an unsupported premise. Now let me step back from the details of the unobservability argument and make a more general epistemological point. The objector advancing the unobservability argument considers a situation where a fact F is knowable, but not itself directly observable.³⁷ He then concludes that F must be reducible to facts which are directly observable, for otherwise (he thinks) there would be no way to explain how F is knowable. But this is a hasty inference. There are other ways we could explain how F is knowable in such a situation.

Suppose a fact G is neither directly observable itself, nor reducible to facts which are all directly observable. Now suppose I form the belief that G on the occasion of having a certain perceptual experience, and suppose further that the belief-forming process by which I form that belief is reliable. Then, if warrant³⁸ is a matter of being produced by a reliable process (as reliabilists tend to argue), I will know G.

Or perhaps the conditions for warrant are a bit more complicated. Perhaps a belief has warrant for a person if it is produced by her cognitive faculties functioning properly in a congenial epistemic environment according to a design plan successfully aimed at the production of true belief.³⁹ If so, then I could know G even if G were neither directly observable nor reducible to facts that are all directly observable. For it might be that I come to believe G, and that my belief was produced by properly functioning cognitive faculties, in a congenial epistemic environment, according to a design plan successfully aimed at the production of true belief.

In short, on various sorts of externalist theories of knowledge or warrant, we can explain how it is that we can know facts that are neither directly observable nor reducible to facts all of which

³⁷ For simplicity, I will now ignore issues of whether something needs to be directly observable *now* to count as directly observable, *simpliciter*. This will not affect the cogency of my argument.

³⁸ I use “warrant” as it is meant by Alvin Plantinga: warrant is that quantity enough of which distinguishes knowledge from mere true belief. See, *inter alia*, Alvin Plantinga, *Warrant and Proper Function* (Oxford: Oxford University Press, 1993), page v.

³⁹ As Alvin Plantinga argues. See the preface and first two chapters of his *Warrant and Proper Function*.

are directly observable. More particularly, we can explain how we can know causal facts that are neither directly observable themselves nor reducible to facts that are. We can know such facts because our beliefs can satisfy the relevant externalist criteria for warrant, regardless of whether or not those facts or the facts they can be reduced to are present in the content of our perceptual experiences in the way that colors, shapes, and motion are.

The internalist, too, might have something to say here.⁴⁰ Suppose, again, that a fact G is neither directly observable itself, nor reducible to facts which are all directly observable. It might nevertheless be the case that one can know that G obtains in virtue of an inference to the best explanation. While I'll leave the development of such a suggestion to the internalist, I think we can see that the objector's view of the requirements for causal knowledge is unnecessarily demanding.

IV. Ned Hall's epistemological argument against anti-reductionism

In a recent article, Ned Hall makes two arguments against certain anti-reductionist accounts of causation. One is epistemological and will be treated here; the other will be discussed in section six below.

Hall begins with a question: "What, on the non-reductionist⁴¹ account, could possibly be the evidence for any causal claim?"⁴² One might think, he allows, that we directly perceive causal relations "in the case of the impacts of various objects on one's body." But he points out that in many cases, indeed in perhaps most cases, "our knowledge of or justified beliefs about causal relations are inferential." And this fact—the fact that we have inferential knowledge (or justified belief) about causal relations—poses a special problem for the anti-reductionist. Or so Hall argues:

⁴⁰ I thank Michael Tooley for pointing this out.

⁴¹ As noted, Hall uses "anti-reductionism" and "non-reductionism" as synonyms, at least in this piece. I'll use "anti-reductionist," since what Hall means by "non-reductionism" here is what I mean by "anti-reductionism," as defined in section two, above.

⁴² Ned Hall, "Causation," in *The Oxford Handbook of Contemporary Philosophy*, p. 519. All quotations from Hall in this section are from p. 519 of "Causation."

You flip a switch, and a light goes on. You flip the switch back to its original position, and the light goes off. You repeat the experiment a hundred times, and the same correlation obtains. You infer that flipping the switch (say, the first time) *caused* the light to go on. You did not perceive this causal relation. All the same, your inference certainly seems reliable. But it is a mystery why, on the non-reductionist view, it should be.

Let's call the event of your flipping the switch the first time "C", and the event of the light turning on (that same time) "E." Then Hall's argument appears to be:

- (9) The inference from the facts described to the conclusion that C caused E is reliable.
- (10) An adequate theory of causation would be able to explain why this inference is reliable.
- But, (11) The anti-reductionist view can't explain why this inference is reliable.
- Thus, (12) The anti-reductionist view is an inadequate theory of causation.

The crucial premise here is (11). Is it really true that an anti-reductionist cannot explain why the inference in question is reliable? It seems to me that an anti-reductionist can. Note that as you repeatedly flip the switch and observe the light go on and off, you ascertain that the timing of changes in the position of the switch co-varies precisely with the timing of changes in the illumination state of the light-bulb. (When you flip the switch, the bulb comes on immediately. And when you flip it again, it immediately goes off. And then it doesn't come on again until...you flip the switch, at which point it comes on immediately.) What could possibly be the reason that this co-variation obtains?

One logically coherent possibility is this: the co-variation obtains because the light switch is on a timer, so that it blinks on and off, and it just so happened that there was an extraordinary coincidence of timing between your flipping the switch and the light-bulb's own timing mechanism. Needless to say, this is exceedingly unlikely. Another logically coherent but exceedingly unlikely possibility is that someone else is watching you and causing the light-bulb to turn on whenever they see you flip the switch (which is in fact unconnected to the bulb). But there is, of course, another quite obvious possibility: The co-variation obtains because the light-switch is connected to the light-bulb in such a way that a change in the position of the switch from "off" to "on" will start a causal process that eventuates in the illumination of the light-bulb,

and a change in the position of the switch from “on” to “off” will block that process. That is, the co-variation obtains because flipping the switch is an indirect cause of a change in the light-bulb’s state.

Now, the point I wish to make is that anti-reductionism is entirely compatible with this last explanation. On SAR, for example, some events are indirect causes of other events in virtue of being connected by causal chains or processes. And nothing about SAR precludes its being the case that such causal processes are usually started by changes in the states of physical objects. But then an anti-reductionist can explain the reliability of the inference quite easily, as follows: In the situation described, the observed co-variation obtains either because flipping the switch is an indirect cause of a change in the light-bulb’s state, or for some other reason. Any other remotely plausible reason (e.g. a coincidence of timing or a hidden prankster) will require the obtaining of a very improbable state of affairs. It is therefore very likely that the co-variation obtains because flipping the switch is an indirect cause of a change in the light-bulb’s state. Given that the co-variation does obtain, it follows that it is very likely that flipping the switch is an indirect cause of a change in the light-bulb’s state. But then it is very likely that “C caused E,” and so the inference to the conclusion that C caused E is reliable.

I take it that the existence of this explanation provides adequate reason to reject (11). So although Hall’s epistemological argument might have force against certain forms of anti-reductionism, it does not pose a problem for SAR.⁴³

⁴³ An objection. I have argued that the most likely explanation of the data implies that C caused E, that this explanation is available to an anti-reductionist as much as to anybody else, and that an anti-reductionist can therefore explain the reliability of the inference to the conclusion that C caused E. Perhaps this means that I have appealed to the practice of inference to the best explanation (IBE). Suppose I have. Hall might be read as anticipating an appeal to the practice of IBE, and thinking that such an appeal won’t help the anti-reductionist. He writes:

“All the same, your inference certainly seems reliable. But it is a mystery why, on the non-reductionist view it should be.

Isn’t such underdetermination of theory by data everyone’s problem? No: not underdetermination of *this* variety. Compare garden variety underdetermination of the kind that yields to a familiar application of inference to the best explanation: we believe that there are atoms, for example, because of the stunning success of a worked out atomic hypothesis at explaining a vast range of observable phenomena. Whatever you think of this style of inference,

V. David Lewis's miscellany objection

It is well known that counterfactual accounts of causation face serious difficulties. From the perspective of the late David Lewis, however, “the difficulties that confront rival approaches seem even more daunting.”⁴⁴ Towards showing this, Lewis mentions some of the rival approaches he has in mind and some of the problems they confront. These rival approaches include just one anti-reductionist view, namely, the view that there is a single “unanalyzable relation of singular causation, which we know by perceptual acquaintance.”⁴⁵ ⁴⁶ Lewis proceeds to raise what he calls the miscellany objection against this view. In the first half of this section I explicate this objection. In the second half, I argue that the considerations Lewis raises do not count against SAR.

V.A. Lewis's miscellany objection

In the paper in which he presents his final analysis of causation, Lewis begins by considering the possibility that causation does not require analysis. He asks, “Is there, perhaps, an unanalyzable relation of singular causation, which we know by perceptual acquaintance, and

you can at least agree that we do not have a *best* explanation unless we have an explanation. Well, what observable phenomena does the non-reductionist *explain* by means of the hypothesis that events (e.g. the flipping of the switch and the light's going on) instantiate some fundamental, two-term relation? None, as far as I can see.” [“Causation,” in *The Oxford Handbook of Contemporary Philosophy*, p. 519]

I mention all this in order to point out that, in showing how the anti-reductionist can explain something purportedly mysterious, I did not use IBE to argue that we should endorse anti-reductionism. Even less was IBE used to argue for the proposition that the flipping of the switch and the light's going on instantiate a fundamental causal relation (on SAR, such a relation is indirect, and thus not ontologically fundamental). Rather, the point was to use IBE to show how an anti-reductionist can explain the reliability of the inference to the conclusion that C caused E.

⁴⁴ Lewis, “Causation as Influence,” in *Causation and Counterfactuals*, p. 75.

⁴⁵ Lewis, “Causation as Influence,” p. 75. Here a relation of singular causation seems to just be a causal relation whose relata are particulars. The contrast is with a relation of general causation, whose relata are stated in more universal terms. A relation of general causation is not to be confused with a general concept of singular causation, which would be a concept of causation between particulars that applies generally (to all sorts of causal situations).

⁴⁶ Lewis seems to be thinking of D.M. Armstrong's view presented in “Going through the Open Door Again: Counterfactual versus Singularist Theories of Causation,” in *Causation and Counterfactuals*, pp. 445-457. See Lewis, “Causation as Influence,” footnote 1 on p. 75.

which we are therefore in a position to refer to and think about?"⁴⁷ Lewis recalls Hume's doctrine that we do not perceive causation, but proceeds to distance himself from that doctrine:

The boot comes forward and touches the ball, and straightway the ball flies off through the goalposts. Do I see that the one thing causes the other? Or do I infer it from what I do see, together with my background knowledge about the ways of the world? I don't know, and I don't know how to find out. So I'm in no position to deny that in such a case I'm perceptually acquainted with an instance of a causal relation; and thereby acquainted as well with the relation that is instantiated.⁴⁸

Lewis does not adopt Hume's position that we cannot perceive causation. But he does offer a different argument against a certain sort of primitivist view. In its entirety, the argument is as follows:

I'm acquainted with *a* causal relation—not with *the* causal relation. Causal relations are many and various, and no amount of watching the footy [sic] will acquaint me with all the causal relations there are, let alone all the causal relations there might have been. And yet I seem to have picked up a *general* concept of causation, applicable to all different kinds of causation, and applicable even to kinds of causation never found in our own world. That's the real problem, even if I concede *pace* Hume that I sometimes perceive causation.

If I ever perceive causation, I perceive it when I watch the footy; or, to take the customary example, if I watch the motions of billiard balls. But the causal mechanism whereby a dinner too low in carbohydrate causes low blood sugar is utterly different. The causal mechanism whereby our former congressman helped cause his own defeat by literally singing the praises of Kenneth Starr is different again. And so on, and so forth; not quite ad infinitum if we limit ourselves to actuality. But we should not limit ourselves to actuality, given that we can perfectly well understand fantasies, or theologies, in which causation works by magical mechanisms entirely alien to the world of our acquaintance. We are not perceptually acquainted with each and every one of all these different actual and possible causal relations. If there is a single causal relation, either it is a far from natural relation, a gruesomely disjunctive miscellany, and so not the sort of relation we can become acquainted with by being acquainted with some few of its disjuncts; or else the many disjuncts have something in common. I think conceptual analysis is required to reveal what it is that all the actual and possible varieties of causation have in common.⁴⁹

Lewis's argument is somewhat obscure, but we can make some headway by characterizing his target more precisely. Lewis's target seems to be the view that there is a unique, unanalyzable relation of singular causation, known by perceptual acquaintance, *that obtains between two events C and E any time we can truthfully say that C is a cause of E*. Call that relation R (and call this

⁴⁷ Lewis, "Causation as Influence," p. 75.

⁴⁸ Lewis, "Causation as Influence," pp. 75-6.

⁴⁹ Lewis, "Causation as Influence," p. 76.

view the target view). On the target view, R obtains between the kick and the ball's motion, between the event consisting of someone's eating a dinner too low in carbohydrates and the later event consisting in that person's having a low blood sugar level, and between fantastical events like Merlin's spell and the prince's transmogrification into a frog. On the target view, there is a single causal relation which is instantiated in all these different situations, and this is "the' causal relation."⁵⁰

Lewis's argument seems to have the following form: Taking the fact that there are many different causal mechanisms as evidence, Lewis asserts that,

- (13) There are many different causal relations.

He continues,

- (14) We cannot become perceptually acquainted with all the causal relations that there are or could be.
- (15) If there is a single relation of causation R, known by perceptual acquaintance (as the target view supposes), then either (a) it is gruesomely disjunctive, or (b) its many disjuncts have something in common (in virtue of which they are all *causal* relations).

What does Lewis mean by disjuncts? Let R1 be the causal relation that obtains between your kick and the soccer ball's motion, let R2 be the causal relation that obtains between the event consisting in someone's eating a dinner too low in carbohydrates and the later event consisting in that person's having a low blood sugar level, and let R3 be the causal relation that obtains between Merlin's spell and the prince's frogification. Then R, thinks Lewis, must be a disjunctive relation of the form 'R1 or R2 or R3 or...', and it will be instantiated whenever one of its disjuncts is. The narrower causal relations (the Ri's) are the disjuncts. Each is *a* relation of causation, but is only a component of the disjunctive relation of causation R. Lewis's argument continues:

- (16) Not (a).

⁵⁰ At p. 77, when summing up a section, Lewis mentions the miscellany objection as a reason "to think that acquaintance with 'the' causal relation...[is not a workable rival] to a conceptual analysis of causation."

The somewhat compressed argument for (16) seems to be: If (a), then we could not have picked up the notion of R by being acquainted with some few of its disjuncts. (For we cannot come to have a grasp on a disjunctive relation whose disjuncts having nothing in common simply by being acquainted with a few of its disjuncts.) But we have picked up the notion of R. (To pick up the notion of R is to come to have a general notion of causation. Someone has this notion when they can see that the kick, the low-carb dinner, and Merlin's spell are all *causes*.) Therefore not (a).

Thus, by (15),

- (17) The many disjuncts of R (i.e. the many causal relations) have something in common (in virtue of which they are all *causal* relations).

But then conceptual analysis is required to figure out what they all have in common. And this implies,

- (18) R can be analyzed to uncover what it is that all the causal relations have in common.

And if R can be analyzed, then,

- (19) R is not an unanalyzable relation.

(19), of course, counts as a refutation of the target view, since the target view claims that R is unanalyzable.

V.B. The miscellany objection and SAR

Several aspects of this argument invite questions. Since I am interested in defending not the target view but SAR, I will focus on only one: do any of the considerations raised here by Lewis count against SAR? I'll consider three possible problems for SAR, and argue that none of the three is a real problem.

First, according to SAR, the concept of a cause (something from which something else comes) is conceptually primitive, and the generic concept of causation that goes along with it is likewise conceptually primitive. To say that this concept is conceptually primitive is to imply that it is not reductively analyzable, that is, not analyzable entirely in terms of other concepts. But—it might seem—Lewis has shown us that the generic concept of causation *is* analyzable. For assume

that the generic concept of causation were not analyzable. Note that the generic concept of causation applies to R1, R2, and R3, and this is because R1, R2, and R3 all have something in common, in virtue of which they all count as causal relations. Then, thinks the Lewisian, “conceptual analysis is required to reveal what it is that” R1, R2, and R3 “have in common.” Therefore it must be that the generic concept of causation can be analyzed.

In reply: focus on the claim that conceptual analysis is *required* to reveal what R1, R2, and R3 have in common that makes them all causal relations. Why is conceptual analysis required here? Why can’t the anti-reductionist simply say that what R1, R2, and R3 have in common is just this: R1, R2, and R3 each involve an effect coming from a cause, in some sense? (The ball’s motion is from the kick, the low blood sugar is from the low-carb dinner, and the frogification is from the spell.)

To be sure, the anti-reductionist can grant that in the first two cases the cause is connected to the effect in virtue of a chain of indirect causation (in the last, depending on how magic is supposed to work, we might have a relation of direct production). And the anti-reductionist can grant that in cases of indirect causation the link between the cause and the final effect is ontologically reducible to other causal facts. But none of that implies that the basic concept of a cause is itself analyzable. No reductive conceptual analysis of the notion of a cause, or the generic notion of causation, is required to say what R1, R2, and R3 have in common that makes them all causal relations.

Second, Lewis’s observation that different cause-effect pairs are often connected *via* very different causal mechanisms might be taken to spell trouble for any view that endorses anti-reductionism about causal relations. As Lewis notes, there are surely different causal mechanisms connecting the low-carb dinner and the low blood sugar, on the one hand, and the congressman’s behavior and his defeat, on the other. Lewis does not say what he means by “causal mechanism” here, but we might take him to be pointing out that the chains of causal intermediaries between the dinner and the sugar level, on the one hand, and the behavior and the defeat, on the other, are

chains of very different sorts. By “causal mechanism,” then, Lewis might mean something like a causal process, where a process is something that involves causal intermediaries. This line of interpretation would then suggest the following problem for anti-reductionism: Given that the causal processes between the {behavior, defeat} pair and the {dinner, sugar level} pair involve very different intermediate causes, it would be a mistake to think that there are two instances of one and the same ontologically primitive causal relation between the members of each pair.

Quite right. Except that this isn't a problem for anti-reductionism, *per se*, and it's certainly not a problem for SAR. It's a problem only for a brand of anti-reductionism that asserts the existence of such an ontologically primitive relation in such cases (as does naïve anti-reductionism). On SAR, there is no ontologically primitive causal relation between the members of these pairs, as they are cases of indirect causation.

Third, in multiple cases of direct production, SAR *does* assert that there are multiple instances of one and the same ontologically primitive relation of direct productive causation. Could the possibility of different mechanisms make a problem for that claim? The third possible problem might be developed like this: (i) In at least some different situations where there are different instances of the direct production relation, there are different causal mechanisms at play (i.e. the different direct causes work by different mechanisms). But (ii) where there are different causal mechanisms at play, there are really multiple causal relations. So (iii) multiple instances of direct production need not be instances of one and the same ontologically primitive relation.

How this problem should be addressed will depend on what is meant by “causal mechanism.” First, suppose that by a “causal mechanism” we mean (as above) a certain sort of chain of causal intermediaries. Then the third possible problem dissolves instantly. Since the relation of direct production is, of course, *direct*, it does not involve any mechanisms at all (in the present sense of “mechanism”). So proposition (i) above becomes false.

Second, suppose “causal mechanism” is not meant to be essentially linked to the presence of causal intermediaries. Suppose it means something else, such that two different cases of direct

production *can* involve different causal mechanisms. For the sake of having a concrete example, suppose we are told that one case of direct production works *via* the mechanism of transfer of momentum, while another works *via* the mechanism of transfer of energy.⁵¹ If we grant for the sake of argument that this example is both possible and properly described, then we should concede proposition (i). But now proposition (ii) has become dubious. One direct cause (call it C1) produces its effect (E1) in virtue of transferring momentum, while another direct cause (C2) produces its effect (E2) in virtue of a transfer of energy. It is true that the two causes manage to be causes in virtue of different properties. But why think that the relations of direct production involved here need to be different? C1 is able to be a direct productive cause of E1 in virtue of one feature; C2 is able to be a direct productive cause of E2 in virtue of some other feature. But that itself does not imply that the ontologically primitive instance of causation that links the {C1, E1} pair and the ontologically primitive instance of causation that links the {C2, E2} pair can't be instances of one and the same ontologically primitive relation of direct production. Or at least if it does, we'd need an argument showing why. In the absence of such an argument, I conclude that nothing about Lewis's miscellany objection poses a genuine problem for SAR.

VI. Hall on level-neutrality

Ned Hall points out that an account of causation “needs to be ‘level-neutral’: it needs to respect the insight that causal relations obtain at and across a wide-variety of levels of description.”⁵² He explains:

I drink some coffee, and perk up as a result. There is causation at the level of my body: drinking the coffee causes me to perk up. There is causation at the biochemical level, involving the interaction of caffeine molecules with other molecules in my body. There is causation at the atomic and subatomic levels as well.⁵³

⁵¹ Thanks to Doug Ehring for suggesting this sort of example to me.

⁵² Ned Hall, “Causation,” in *The Oxford Handbook of Contemporary Philosophy*, p. 515.

⁵³ *Ibid.*

After making this observation, Hall argues that anti-reductionism (in at least one of its versions)⁵⁴ suffers from a problem relating to the connection between causal relations at different levels:

[I]t is not that the non-reductionist cannot respect the existence of such relations [causal relations at all levels from the microphysical to the macrophysical]; for example, when I drink the coffee there is, on his view, a two-place singular relation of causation that obtains between the event of my drinking and the event of my perking up, and likewise a multitude of instances of this relation at the biochemical level (between events involving caffeine and the cells of my body). What is a complete mystery is why there should be any relations whatsoever of metaphysical dependence between the patterns of instantiation of causation at these different levels. Minimally, it seems that we should have this much: if in any world the pattern of events in my body is exactly as it actually is, and the pattern of instantiation of causal relations at the biochemical level is exactly as it actually is, then so too the events of my drinking the coffee and my perking up instantiate the causal relation. But if all we say about the causal relation is that it is one of the fundamental relations instantiated in our world, then our view provides no resources for explaining why this relation of metaphysical dependence should hold.⁵⁵

We might indeed have a problem here if all we said about “the” causal relation were that it is one of the fundamental relations instantiated in the world. But the anti-reductionist can say more; he can make the sorts of distinctions made in section two. The anti-reductionist view Hall means to rebut seems to be a view according to which there is just one causal relation, which is ontologically primitive (i.e. fundamental), and which holds between the drinking of the coffee and the perking up. But from the perspective of SAR, things should be described differently. It is true to say that the drinking does cause the perking up. But what we have here is a relation of indirect production (or some form of indirect causation, at least). And (though the generic concept of causation is conceptually primitive) this causal relation is not fundamental in the sense of being ontologically primitive. Any relation of indirect causation is ontologically reducible to the causal relations between the intermediate causes.

This difference between SAR and the account Hall has in mind serves to provide the resources for explaining the metaphysical dependence between levels of causation. Focus on the relation of metaphysical dependence expressed by the conditional:

⁵⁴ This argument is directed at the Tooley-Armstrong brand of anti-reductionism.

⁵⁵ “Causation,” in *The Oxford Handbook of Contemporary Philosophy*, p. 518.

- (20) [I]f in any world the pattern of events in my body is exactly as it actually is, and the pattern of instantiation of causal relations at the biochemical level is exactly as it actually is, then so too the events of my drinking the coffee and my perking up stand in the causal relation in which they actually stand.

The proponent of SAR has the resources to explain why this relation of metaphysical dependence holds. The explanation would proceed in two stages. First, letting “C” be the event of drinking the coffee and “E” be the event of the drinker’s perking up, C and E would be given fuller, more detailed descriptions in chemical and biological terms. (Just to get the rough idea: C could be described as the event of ingesting a particular liquid containing significant quantities of caffeine, while some detailed description of the neurophysiological state of becoming more alert would be the more precise description of E.) The second stage of the explanation would involve pointing out that C and E are linked by a chain of indirect causation (ingesting this liquid containing significant quantities of caffeine causes caffeine to be absorbed into the bloodstream, which in turn causes...which in turn causes the brain to enter into the neurophysiological state which is the being-perked-up state). Now we can explain why the metaphysical dependence expressed in (20) holds. If the pattern of events in my body and the pattern of instantiation of causal relations at the biochemical level are exactly as they actually are, then it must be that the intermediate causes between C and E are all in place. But then it will follow that C is an indirect cause of E, which is just to say that the events of my drinking the coffee and my perking up stand in the causal relation in which they actually stand.

The issue Hall has raised here, therefore, does not pose a problem for SAR (or, in fact, for other possible versions of anti-reductionism that handle indirect causation in something like the way SAR does).

VII. Conclusion

In this paper I’ve tried to show that there is a type of anti-reductionism that is not threatened by the unobservability argument, Lewis’s miscellany objection, or the two problems raised by Hall. I want to close with two brief comments about future work. First, due to length constraints, I

have passed over a second potential objection of Lewis's, viz. the missing relata objection.⁵⁶ Although a full treatment of this objection will have to be left for another time, I believe Lewis's worries can be addressed by way of the considerations offered in section two, concerning the analogical character of causation and the ways in which causation involving absences is similar to production. Second, there has been a great deal of work on the relation between causation and probability-increase, and on quite complex methods for identifying causes via statistical methods. An anti-reductionist can be enthusiastic about these sorts of projects, and about projects mapping out the relations between causation and the other conceptual connotations of causation—counterfactuals, explanation, moral responsibility, and so forth. Such projects can, among other things, give us greater clarity about the conceptual relations between causation and these closely connected concepts, and perhaps greater clarity about the different types of causation. I mention this to make the point that an endorsement of anti-reductionism need not be “defeatist,” in that it need not involve a negative attitude towards further work on causation.⁵⁷

⁵⁶ “The problem [of explaining the unity of the relation of causation] becomes especially acute when we remember to cover not only causation of positive events by positive events, but also causation by absences, causation of absences, and causation via absences as intermediate steps. The most fundamental problem is that absences are unsuitable relata for any sort of causal relation, by reason of their nonexistence. This is everyone's problem. It is not to be dodged by saying that causation involving absences is really ‘causation*,’ a different thing from genuine causation—call it what you will, it still needs to be part of the story.” [David Lewis, “Causation as Influence,” p. 77]

⁵⁷ For their helpful comments on an earlier draft of this paper, I am grateful to Colleen McCluskey, Eleonore Stump, and Kent Staley, and to the participants in the 2006 Causation and Responsibility Roundtable, especially David Armstrong, Phil Dowe, Doug Ehring, Peter Menzies, Michael Moore, Laurie Paul, Jonathan Schaffer, and Michael Tooley. I am also grateful to the John Templeton Foundation for support during the time in which this paper was completed.