

## Nomic Universals and Particular Causal Relations: Which are Basic and Which are Derived?

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**Abstract** Armstrong holds that a law of nature is a certain sort of structural universal which, in turn, fixes causal relations between particular states of affairs. His claim that these nomic structural universals explain causal relations commits him to saying that such universals are irreducible, not supervenient upon the particular causal relations they fix. However, Armstrong also wants to avoid Plato's view that a universal can exist without being instantiated, a view which he regards as incompatible with naturalism. This construal of naturalism forces Armstrong to say that universals are abstractions from a certain class of particulars; they are abstractions from first-order states of affairs, to be more precise. It is here argued that these two tendencies in Armstrong cannot be reconciled: To say that universals are abstractions from first-order states of affairs is not compatible with saying that universals fix causal relations between particulars. Causal relations are themselves states of affairs of a sort, and Armstrong's claim that a law is a kind of structural universal is best understood as the view that any given law logically supervenes on its corresponding causal relations. The result is an inconsistency, Armstrong having to say that laws do not supervene on particular causal relations while also being committed to the view that they do so supervene. The inconsistency is perhaps best resolved by denying that universals are abstractions from states of affairs.

**Keywords** laws of nature · states of affairs · universals

D. M. Armstrong, Fred Dretske, and Michael Tooley argue that a law of nature is a relation between universals.<sup>1</sup> More specifically, relations between universals generate corresponding

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<sup>1</sup>Fred I. Dretske, 'Laws of Nature,' *Philosophy of Science*, 44 (1977), pp. 248–68; Michael Tooley, 'The Nature of Laws,' *Canadian Journal of Philosophy*, 7 (1977), pp. 667–98; D. M. Armstrong, *What Is a Law of Nature?* (Cambridge University Press, 1983), and *A World of States of Affairs* (Cambridge University Press, 1997) Chapters 15 and 16.

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relations of necessity, probability, or exclusion between states of affairs. For example: Copper conducts electricity since the universal of being copper necessitates the universal of being conductive.

Armstrong, whose version of the theory shall be the focus here, speaks of universals as ‘abstractions’ from ‘states of affairs.’ For Armstrong, a *state of affairs* is ‘a particular’s having a certain property, or two or more particulars standing in a certain relation.’<sup>2</sup> This horse’s running fast is a state of affairs. London’s being west of Istanbul is also a state of affairs. Armstrong states the point as follows: ‘We may think of both universals and particulars as *abstractions* from states of affairs. I mean by this that, although they cannot exist outside states of affairs, we can single out one from the other and make them objects of thought. The property F is an abstraction from all the states of affairs in which F figures.’<sup>3</sup>

Armstrong cannot mean that particulars are abstractions from states of affairs with no further qualification. Since any (first-order) state of affairs necessarily incorporates at least one particular, a state of affairs is not repeatable as is a universal. This means that a state of affairs is itself a particular. In fact, elsewhere Armstrong even refers to states of affairs as ‘thick particulars’ a thick particular being a particular considered together with all of its properties.<sup>4</sup> So far as particulars go, the thick particular stands at the opposite extreme from the ‘substratum’ of Locke, i.e. the particular considered apart from its properties. Armstrong calls the latter a ‘thin particular.’ Presumably, the thin particular for Armstrong corresponds to one ultimate degree of abstraction from a state of affairs. Between the thick and thin particulars lie degrees of abstraction corresponding to the number of properties which have been stripped away from the state of affairs. To speak of ‘particulars as abstractions from states of affairs’ must be to refer to a subset of particulars, for there is a class of particulars, the thick ones, which are not abstractions. This point is a good one to bear in mind, since it means that there is an asymmetry between universals and particulars: All universals are abstractions from a certain class of particulars which are not themselves abstractions from anything. This implies that there are no uninstantiated universals, an important claim for Armstrong as will be discussed later.

Whatever precisely he may mean by ‘abstraction,’ Armstrong is committed to the view that universals supervene on states of affairs. He writes that ‘Entity Q supervenes on entity P if and only if every world that contains P contains Q.’<sup>5</sup> For example, on Armstrong’s view, a universal supervenes on all the states of affairs in which it is instantiated, since every world containing those states of affairs also contains the universal. This does not fully capture the sense in which universals depend upon states of affairs. For one thing, Q’s supervening on P does not rule out P’s supervening on Q, while universals clearly depend upon states of affairs in a way in which states of affairs do not depend upon universals; but Armstrong’s notion of universals as abstractions from states of affairs *at least implies* that a universal supervenes on all of the states of affairs in which it is instantiated.

For Armstrong, states of affairs are causes and effects. His desire for ontological parsimony motivates this. Given that the world, at its most basic level, consists wholly of states of affairs with universals existing derivatively, there is no need to theorize anything

<sup>2</sup> D. M. Armstrong, *Nominalism and Realism*, Vol. 1 of *Universals and Scientific Realism*, (Cambridge University Press, 1978), p. 80.

<sup>3</sup> Armstrong, ‘Can a Naturalist Believe in Universals?’, in E. Ullmann-Margalit (ed.) *Science in Reflection*, Dordrecht, The Netherlands: Kluwer, pp. 103–15.

<sup>4</sup> Armstrong, *Universals: An Opinionated Introduction*, (Boulder, CO: Westview, 1989), p. 95.

<sup>5</sup> *Ibid.*, p. 56, and *A World of States of Affairs*, pp. 11–2.

other than states of affairs, thick particulars, as the causal relata.<sup>6</sup> Causal relations between states of affairs are, by presumption, lawlike. It would be good to have a metaphysic that explains this. Armstrong proposes that there are relations between universals from which lawlike relations between thick particulars flow. The thick particular *f* necessitates, renders probable, or excludes the thick particular *g* because of some pertinent relation between the corresponding universals *F* and *G*,<sup>7</sup> at least according to Armstrong.

For Armstrong, there are second-order universals, i.e., properties and relations of properties and relations; and laws of nature are among these higher-order relations.<sup>8</sup> In other words, a law of nature is a pattern of linked universals. This pattern of linked universals is itself a universal but one of a higher order; it is a relation among universals. Since it is a pattern, a law of nature is also a structural universal. A structural universal consists of constituent universals such that different parts of the particular which exemplifies the structural universal will instantiate different constituent universals. An example of a particular instantiating a structural universal would be a water molecule, for something can only be a water molecule if it instantiates a patterned property, different parts of the molecule instantiating different universals which go to make up the universal of being a water molecule.<sup>9</sup>

Armstrong's point is that a causal relation between particulars instantiates a structural property. For example, states of affairs of the form *A-caused-B* are particulars (thick particulars) instantiating structural properties of a temporal sort. It is the nature of a causal sequence to instantiate a special kind of structural property, one in which the structure unfolds through time just as a flag (with a design on it) or a molecule is an instantiation of a structural property in which the structure is extended through space. In some cases, these particular causal relations essentially involve structural extension through time and in some cases they do not, but they are in all cases structures.

Causal relations between particulars are themselves states of affairs, namely causal-relational states of affairs.<sup>10</sup> Just as this horse's running fast is a state of affairs, so also the striking of this match causing the ignition of this very same match is a state of affairs, and ergo it is a thick particular (by reason of being fully describable). It follows from Armstrong's attempt to explain particular causal relations in terms of universals that causal-relational thick particulars exist in virtue of a certain class of structural universals, namely those involving links of necessity, probability, or exclusion.

But this supposed dependency of causal-relational thick particulars on certain universals becomes problematic as soon as one reflects on the supervenient nature of universals. It seems paradoxical that causal relations between particulars would depend upon certain structural universals given that universals have a dependent existence themselves, being somehow derived from particulars. In other words, it is strange that some class of

<sup>6</sup> *Nominalism and Realism*, p. 132. To speak of states of affairs or thick particulars as the causal relata needs some qualification. Some thick particulars may be too thick to count as relata for certain causal relations. It is plausible that when one thing causes another it is often only in virtue of *some* of that thing's properties and not all of them. In such cases, it may be better to speak of the causal relata as abstractions from thick particulars. But, since this qualification has no obvious bearing on the argument, it will not be mentioned again.

<sup>7</sup> *What Is a Law of Nature?*

<sup>8</sup> *A World of States of Affairs*, p. 226f.

<sup>9</sup> *Ibid.*, p. 32f.

<sup>10</sup> Armstrong does not deny the existence of non-causal laws, but suggests that they logically supervene on causal laws (*ibid.*, p. 233f). Hence, causal relations are the nomic relations here being discussed.

particulars (causal relations between particulars being themselves particulars of a sort) depends for its existence on a class of structural universals. Given that universals supervene upon particulars, one would expect the dependency to run in the other direction.

Since the dependency of universals on thick particulars is one of supervenience, let's consider the definition of supervenience once more: Entity Q supervenes on entity P if, and only if, every world containing P contains Q. If the definition refers to all logically possible worlds, all worlds *simpliciter*, then one has the notion of *logical supervenience*. Q *naturally supervenes* on P if, and only if, for every world with the same laws as the actual world, if that world contains P it contains Q; and the laws of nature are the truthmaker for every P-world's being a Q-world. Although controversial, consciousness might be a case of natural supervenience. If consciousness naturally supervenes on certain physical features, then, even though it is conceivable that all physical features should be distributed just as they are but with no consciousness, the laws of nature guarantee that the actual distribution of physical features is accompanied by consciousness.<sup>11</sup>

To say that universals *naturally* supervene on states of affairs is an option that someone who believes in universals could take, but it is not viable for one wanting to explain laws of nature in terms of universals. To say that universals exist because they naturally supervene on states of affairs is to say that universals owe their being, in part, to laws. But one cannot then go on to say that laws owe their being to universals. To escape this objection, one might be tempted to say that the laws of nature which give being to some universals themselves result from other universals which depend on further laws which depend on yet other universals, and so infinitely on. This endless regress is vicious for anyone trying to analyse laws, for an unanalysed law appears at each step. I suggest that Armstrong, Dretske, and Tooley would deny that universals *naturally* supervene on states of affairs.

If universals supervene upon states of affairs, but not naturally, then the remaining option is that they *logically* supervene on them. To say that Q logically supervenes on P is to say that every logically possible P-world is a Q-world, and to say this is to imply that Q's being is nothing apart from P's being. This means, in Armstrong's words, that Q is an ontological 'free lunch' once one has P.<sup>12</sup> Suppose that you are 35 years old. Your being less than a million years old logically supervenes on your being 35 years old. Your being 35 years old is part of the universe. One cannot come to a complete knowledge of the universe without knowing this fact. (Or, if this fact turns out to be logically supervenient on something more basic, then one cannot come to a complete understanding of the universe without knowing that upon which this fact ultimately logically supervenes; but let us ignore this cumbersome qualification.) Is your being less than a million years old an additional fact? Must someone come to know that you are less than a million years old in addition to learning that you are 35? No, because your being less than a million simply flows from your being 35. It is not any kind of real addition to the world, it is a free lunch. When the logically supervenient and its supervenience base are not identical, as in the example just given, then the direction of flow is one way only. You are not 35 because you are less than a million. You are less than a million because you are 35.

If universals logically supervene on causal-relational states of affairs, can the universals be said to explain causal-relational states of affairs? No. For as just noted, the logically

<sup>11</sup> David Chalmers defends this view in his *The Conscious Mind* (Oxford University Press, 1996). John Searle describes consciousness as 'causally supervening' on physical features of the brain, by which I take him to mean natural supervenience; see his *The Rediscovery of the Mind* (Cambridge, MA: The MIT Press, 1992), pp. 124–26.

<sup>12</sup> *A World of States of Affairs*, pp. 12–3.

supervenient is a free lunch in relation to that upon which it supervenes. For Armstrong, laws are universals of a sort – structural higher-order universals – and states of affairs of the kind *A-caused-B* are thick particulars of a sort – causal-relational thick particulars. Furthermore, Armstrong is committed to saying that these laws, these structural higher-order universals, logically supervene on thick particulars of the sort *A-caused-B*. It follows from this that laws do *not* fix causal relations among particulars, e.g. the thick particular or state of affairs *A-caused-B* does *not* flow from the relevant law of nature; for that law of nature logically supervenes on the state of affairs *A-caused-B*. It is the law of nature which flows from the relevant particular(s) and not the other way around.

This follows from Armstrong's conception of universals, and hence laws, as logically supervenient, as abstractions from the corresponding thick particulars; and yet it is, of course, the *opposite* of what he wants to say about the relation between laws and states of affairs when he uses universals to *explain* causal relations among thick particulars. In fact, at some points, it *is* the opposite of what he says: He explicitly describes laws as higher-order states of affairs which are *not* supervenient on first-order states of affairs (including causal-relational thick particulars), i.e., which are irreducible.<sup>13</sup> He must say this if he wants to use universals to *explain* causal relations between particulars. But it is not clear how Armstrong can maintain that laws fail to supervene on causal-relational thick particulars while also claiming that universals are abstractions from thick particulars, as his general remarks about abstraction commit him to saying, for presumably this would mean that laws of nature are structural universals which are abstractions from causal-relational thick particulars. Armstrong seems to need a notion of abstraction which does not imply logical supervenience, but it is not clear what that would be.

Armstrong notes that Plato anticipates his theory of laws in the *Phaedo* (102–107).<sup>14</sup> For Plato, a universal (form) exists independently of any of its instances, being neither logically nor naturally supervenient on any particular in which it is instantiated. In fact, for Plato, it is tangible things which exist parasitically, depending somehow upon unseen forms for their being. The relation-of-universals theory of laws is almost inevitable given Plato's metaphysical picture. Perhaps the only way for Plato to avoid it (if, for whatever reason, he wanted to avoid it) would be for him to deny that there are laws. If universals ground the being of concrete things, then it is no surprise that lawlike relations between concrete things arise from relations between universals.

The alternative to Plato, other than just denying that there are universals, is to view them as either naturally or logically supervenient upon particulars. Armstrong's view is a species of that approach, since his states of affairs are particulars of a sort. But I have aimed to show that this tactic is hard to square with the view that laws are structural universals which can be used to explain causal relations between particulars. If laws are universals, then Armstrong the anti-Platonist must say that laws supervene on causal-relational thick particulars. However, he also wants these universals to *explain* causal-relational thick particulars which means, as he well knows, that those universals *cannot* be supervenient. Unless this apparent dilemma can somehow be dissolved, it is reasonable to say that Armstrong's view of laws, despite his wishes, belongs with Plato's metaphysics.

Armstrong, however, rejects Plato's theory by asserting *the principle of instantiation*, namely the claim that for each *n*-adic universal, there exist at least *n* particulars such that

<sup>13</sup> Ibid., pp. 196–97.

<sup>14</sup> Ibid., p. 226; *What Is a Law of Nature?*, p. 85.

they instantiate the universal.<sup>15</sup> Armstrong's rejection of Plato is highly motivated, and it is not likely that he would seriously reconsider it. He and most other contemporary philosophers maintain that there is nothing outside the space–time continuum. However, he claims that the existence of uninstantiated universals would contradict that view.<sup>16</sup> Were there an uninstantiated universal, (say) being perfectly circular, then there would be no state of affairs corresponding to it, nothing in space or time from which to abstract it. Since that universal would not be found in space or time, it would need some other domain outside space and time in which to live. We would have to follow Plato and theorize a non-empirical realm for it. Showing Armstrong's view of laws to be committed to Plato's metaphysic does not refute the former but might make it less attractive to the philosophers most likely to hold it. On the other hand, the many virtues of Armstrong's approach to laws could make Plato's world more welcoming and believable.

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<sup>15</sup> *Nominalism and Realism*, p. 113; 'Can a Naturalist Believe in Universals?', p. 107f.

<sup>16</sup> *Ibid.*