Freedom, Necessity, and Laws of Nature as Relations between Universals

The disagreement between those who assert and those who deny the compatibility of free will and determinism is often thought to turn on the question of which conception of free will is the correct one. Incompatibilists hold that free will is a special kind of ability that distinguishes us from the rest of nature - the unconditional and categorical ability to do otherwise. Compatibilists argue that something less than this is required; for instance, that someone has free will just in case her actions are caused by her own beliefs and desires and it's true that if she'd wanted to do otherwise, she would have done so.

But this way of thinking about the free will debate is a mistake. The debate is about whether deterministic laws deprive us of a necessary condition of free will - being able to do otherwise. A compatibilist can and should claim that there are deterministic worlds at which some agents are free to do otherwise in just the sense that the incompatibilist denies - nothing prevents them from exercising their unconditional and categorical ability to do other than what they in fact do. Notwithstanding recent compatibilist attempts to argue otherwise[1], this is a minimal requirement of any kind of free will worth wanting.

Anyone hoping to show that being able to do otherwise is not compatible with determinism has to appeal to assumptions about the laws of nature.[2] That is, they either have to establish the truth of a nonHumean view of laws or show that laws understood even the Humean way constrain our causal powers.[3]

In this paper, I'll look at an argument for incompatibilism that appears to be based only on the claim that a free agent has the unconditional, categorical, and unimpeded ability to do otherwise. The argument in fact relies on a controversial claim about the conditions in which this ability is exercised, but a compatibilist may be able to accept this claim. I will show that the success of the argument requires, not just a nonHumean view of laws, but a particular kind of nonHumean view which entails that at deterministic worlds there are logical connections between facts about the world at one time and facts about the world at a later time. In the last section, I consider an account of laws which may provide the incompatibilist with what she needs - the account of laws as relations between universals.

Being Able to do Otherwise

Someone might convince herself of the truth of incompatibilism by arguing as follows:

If I am able to do otherwise, then nothing prevents me from doing so. That is, I can do otherwise, given all the circumstances that obtain now. All the circumstances include the laws as well as the particular facts. But if determinism is true, then no one can ever do otherwise, given the laws and all the particular facts about the world at any time. Therefore, if determinism is true, I cannot do otherwise.

As it stands, the argument equivocates between two ways of reading `I can do otherwise, given all the circumstances that obtain now'. On the first reading, the claim that I am now able to do otherwise only if I can do otherwise, given all the circumstances that obtain now, is uncontroversially true. On the second reading, the claim is not obviously true. The success of the argument depends on the second reading.

The uncontroversial claim is that I am able, at time t, to do something only if I have the ability in the circumstances that actually obtain at t; that is, my ability is not conditional on the obtaining of different circumstances at t. There is no disagreement between the incompatibilist and the compatibilist about this. The compatibilist does not (or should not) hold that when we say that someone can now do x we mean that if circumstances were different, she could do x.[4] Of course, we sometimes attribute conditional abilities to agents; for instance, when we say "you could run a four minute mile, if you trained harder". But when we do this, we imply that the agent does not now have the ability. ("You can't run a four minute mile now, given the shape you're in.") Ordinarily, when we say that someone can do something, we mean that she can do it given the physical condition she is actually in at that time.

The controversial claim is that I am able, at time t, to do something only if one of the possible worlds at which I do it exactly resembles the actual world at time t; that is, only if the exercise of my ability is not conditional on the obtaining of any nonactual circumstances at t.

There are two things to note about the controversial claim. First, the facts which are kept constant are facts about the world at or during a time shortly before the time of the relevant action. I was reading on the beach at noon today when you asked me to go for a swim. Was I able to do so? The controversial claim says that I was able, at noon, to go swimming only if there is a possible world exactly like our world at noon at which I go swimming at some time shortly after noon.[5]

Second, the controversial claim assumes that we can make sense of the notion of what the world is like at a given time in a way that excludes facts such as the fact that ten seconds later someone will have moved her arm. Providing an account which succeeds in doing this is no easy matter, but without some such account the thesis of determinism will be trivially true. So we should grant that there is a genuine distinction to be drawn.[6]

Note that someone who supports the controversial claim need not deny that a necessary condition of being able to do x is that the agent would do x if she decided to do so. Her claim is that it is also necessary that the agent can decide to do x and that this is so only if there is a world exactly like the agent's world at some some time before action at which the agent both decides to do x and does x.

Someone might object that the controversial claim is nevertheless false because all that we mean when we say that someone is able to do x is that if she decided to do it, she would.[7] It's not relevant whether the worlds at which she decides differently are also different in other ways - for instance, with respect to the causal determinants of her decision.

This simple reply will not do. There are well-known counterexamples to attempts to provide a conditional analysis of statements of the form `S is able to do x'. Someone in a coma is unable to

move her arm, yet it may be true that if she decided to move her arm, she would. The problem is that the closest worlds at which she decides to move her arm are worlds at which she is not in a coma and for that reason able to do something she is not in fact able to do.[8]

The coma case supports the view that the truth-makers of claims about what someone is able to do are (at least partly) categorical or intrinsic facts about the agent. Even if I were to succeed in the future, after much training, in running a four minute mile, this would not show that I now have the ability to do so. Why not? Because my relevant intrinsic properties - the physical condition of my heart, lungs, and legs - would be different. This shows that certain facts about the agent must be kept constant in any test of the abilities of the agent. But it does not support the controversial claim, which says that all the facts about the world at some time before action must be kept constant.

Someone might try to argue for the controversial claim by appealing to the distinction between having the ability to do x and being able to do it. An agent with the ability to run a four minute mile may be unable to do so because she is imprisoned in a tiny room.

We could avoid drawing a distinction between having an ability and being able to do something if we said that the runner has temporarily lost the ability to run a four minute mile. But we need the distinction because there are two different sorts of reasons someone may be unable to do something. She may lack the ability to do acts of that kind; evidence for this includes the fact that she has never done an act of that kind, that she doesn't have the intrinsic properties which are the basis of the ability, and so on. Or there may be some impediment which would prevent anyone (whether or not they have the ability) from doing an act of that kind. Someone may be unable to run a four minute mile because she lacks the ability (her fastest speed is five minutes) or because there is something which would prevent her from doing what she has the ability to do. (She's been drugged and will be unconscious for the next few hours; she's in a room equipped with an automatic locking device which would be triggered by her attempt to leave).

There are cases where it is difficult to say whether someone is unable to do something because she lacks the ability or because she cannot, on this occasion, exercise the ability.[9] But it seems reasonable to recognize the distinction and to recognize that having the ability to do something does not entail being able to do so. An agent is able to do x just in case she has the (unconditional and categorical) ability to do x and there is, on this occasion, no impediment to the exercise of the ability. This, I think, is our common conception of what it is to be able to do something.

The distinction between having an ability and being able to do something suggests the following argument for the controversial claim: An agent is able, at time t, to do x just in case there is no impediment to the exercise of her ability to do x. If there is no impediment, then the circumstances C which obtain at t don't prevent her from exercising her ability. If this is so, then the exercise of the ability does not require that the world is different at t; that is, there is a possible world at which C obtains at t and the agent does x at some time t* (later than t). But then the controversial claim is true; an agent is able, at time t, to do x only if there is a world exactly like her world at t at which she does x at some later time t*.

The key move in this argument is from "circumstances C which obtain at t don't prevent S from exercising her ability to do x" to "there is a world with C at t at which S does x at t*". We will find

this move persuasive only if we think that every change in circumstances counts as the removal of an impediment. And this is far from obvious. If I turn down your invitation (at t) to go swimming because I would rather finish the novel I'm reading, then it may be that any world at which I have the same beliefs and desires at t is a world at which I continue to read at t*.[10] If the controversial claim is true, I am unable to go swimming. Yet I have the ability to swim (which I demonstrated on this very beach, only an hour ago) and there is nothing in the circumstances that we would ordinarily count as an impediment; I didn't just sprain my ankle, get cramps, acquire a pathological fear of water, etc. Someone who nevertheless denies that I am able to swim seems committed to the view that my own beliefs and/or desires prevent me from doing something I have the ability to do.

There are cases in which it may be true that an agent is prevented from doing something by her own beliefs and desires; someone with an extreme case of stage fright may be unable to play something that she could play if either her beliefs or her desires were different. But this supports the controversial claim only if it can be shown that there is no relevant difference between these sorts of cases and what we generally regard as normal cases of acting for reasons.

The defender of the controversial claim may reply that whether there is a relevant difference between pathological cases (addictions, phobias, compulsions, etc.) and normal ones depends on whether the agent's action is causally determined or not. If I'm lucky enough to be a resident of a world that is indeterministic in the right sort of way, then there are worlds just like my world at t at which I go swimming at t*. (I'd rather finish the novel, but I also know that I need exercise, so I go swimming.) But if I have the bad luck to be resident of a deterministic world, there are no such worlds, and I can neither go swimming nor do anything else that I fail to do.

But this is just a statement of the incompatibilist thesis that deterministic causal conditions prevent agents from doing anything other than what they do.[11] We were looking for an argument for the controversial claim, which was then supposed to provide an argument for incompatibilism.

Although we've found no compelling argument for the controversial claim, it's hard to resist the belief that it is true. It's natural to think that part of what makes it the case that I'm a free agent is that I am able to do otherwise, given things just the way they are, and natural to think that this is so only if there is a world just like ours at the relevant time at which I do otherwise. This seems to show that our pretheoretic intuitions are incompatibilist. But this appearance may be misleading. Whether the controversial claim entails incompatibilism depends on what the correct account of laws is.

Necessity

Suppose that we accept the controversial claim. What follows? Here's a formal statement of the argument:

1. At t, S is able to do x only if there is a possible world with exactly the same circumstances at t at which S does x at some time t* (where t* is later than t).

2. The circumstances that obtain at t include the laws as well as the particular facts about the world at t.

3. At t, S is able to do x only if there is a possible world with all the same laws and all the same particular facts at t at which S does x at t*.

4. If determinism is true, then for every agent S, every time t*, and every action x which S fails to do at t*, there is no time t such that there is a possible world that has all the same laws and all the same particular facts as our world at t at which S does x at t*.

5. Therefore, if determinism is true, no one is ever able to do anything that she fails to do.

The first premise is the controversial claim. Premises 1 and 2 entail 3, which says that a necessary condition of being able to do x is that the agent does x at a possible world which has the same laws as our world and which is exactly like our world at a time shortly before the agent acts. Premise 4 says that no deterministic worlds satisfy this condition with respect to any undone action. The conclusion follows from 3 and 4.

The crucial premise is 2, which says that the facts about the world at t include the laws as well as facts about particular events and states of affairs. Do we have good reason to believe it to be true?

Anyone with a Humean view of laws believes that the truthmakers of law-statements are either facts about regularities of events in past, present, and future, or some subset of these facts.[12] On this view, facts about the laws include facts about the future. So even if determinism is true, there are worlds which are exactly like our world at t at which an agent does otherwise at some later time t*; the laws of these worlds are different from those of our world. Given a Humean account of laws, then, the argument fails because premise 2 is false.[13]

This applies to any Humean account of laws, no matter how sophisticated. What all Humean accounts have in common is the view that laws are some subset of the regularities of the world and that law-statements are a subset of the true universal generalizations. Different Humean accounts diverge in their explanation of how the lawlike generalizations are distinguished from the nonlawlike ones. The simplest accounts hold that the distinction is drawn on the basis of syntactic or formal considerations alone. Other accounts attempt to demarcate the set of law-statements by appealing to subjective criteria such as predictive power.[14] Still others attempt to do the job by appealing to objective criteria such as resiliency[15] or the simplicity and explanatory power of a system of putative lawlike generalizations[16]. But all Humean accounts have in common that at least part of what makes it the case that something is a law of nature is facts about events at future times.

So even if the controversial claim is granted, the argument fails given the truth of any Humean account of laws.

Someone who holds a singularity theory of causation thinks that causation is a relation between particular events or states of affairs that obtains independently of whether or not these events instantiate any law. On this view, what makes it the case that f caused g is a fact about the spatio-temporal region in which f and g occur.[17] This might seem to provide the incompatibilist with what she needs to make the argument go through. But this is not so. The singularity theory of

causation is compatible with a modified Humean account of law.[18] Someone who holds this view thinks that Hume got things backwards. Instead of defining cause in terms of law, and law in terms of regularity, as Hume did, we should define laws in terms of the repeated occurrence of particular causal sequences.[19] On this view, facts about the laws may be counted as part of the facts about what the world is like at or during a given time. But facts about the laws at or during a time do not logically determine facts about the laws at future times. So on this account, too, there are possible worlds which exactly resemble our world until time t at which a determined agent does otherwise at t*; these are worlds at which the causal laws at t* are different from those which obtain up to and including time t.

Rejection of a Humean account of causation will not help the incompatibilist. What's needed is a nonHumean account of laws. And what seems to be required is an account of laws on which both of the following claims are true:

i) The facts in virtue of which a law-statement is true at time t do not include facts about the future relative to t;[20]

ii) Facts about the laws up to and including time t, together with the particular facts about t, logically determine facts about the future relative to t.

If a Humean account of laws is correct, the first claim is false. On the modified Humean account according to which a law obtains at t in virtue of the past regularity of the relevant singular causal facts, the first claim is true. But the second claim is false. It is logically possible that, until time t, all F events have caused G events but the F event which occurs at t lacks the power to cause a G event at t*.[21]

How can any account of laws hold that both claims are true? What seems to be required are logical connections between distinct existences - facts about the world at one time and facts about the world at a later time. But, since the time of Hume, it has generally been recognized that there is no such thing.

Nevertheless, there is an account of laws which seems to be committed to the truth of both claims. This is the account of laws as contingent relations between universals which has been developed independently by Fred Dretske[22], Michael Tooley[23], and D.M. Armstrong[24]. I will discuss Armstrong's version.

Laws as Relations between Universals

Armstrong defends an Aristotelian but a posteriori realism about universals.[25] It is Aristotelian in that it recognizes no uninstantiated universals and no bare particulars; universals and particulars are both abstractions from states of affairs. It is a posteriori in that universals are not the meanings of general terms; there is no universal corresponding to "grue", nor even to "green".[26] Universals are the repeatable features of the world, posited to explain the genuine likenesses in things. Two particulars instantiate the same universal only if they resemble each other exactly in some respect; Armstrong gives as a possible example the charge **e** of an electron.[27] A universal is unlike a particular in being the sort of thing that can be in many places at the same time; the universal **F** is wholly present in every spatiotemporal region which is **F**.

Armstrong uses his theory of universals to develop an account of laws.[28] The account is motivated by his conviction that Humean accounts are doomed to failure both because they cannot distinguish between laws and accidental regularities and because they cannot solve the problem of induction.[29] He argues that the lesson to be learned is that the truthmakers of law-statements are not regularities of any sort; a law is a higher order state of affairs consisting of a relation between universals. He uses `**N(F,G)'** to symbolize this state of affairs.

The **N** relation is called `necessitation', but this should not be confused with logical necessity. The relation is a primitive and irreduceable relation of contingent or `natural' necessity. Whereas singularity theorists think that particular events stand in irreduceable causal relations, Armstrong thinks that universals stand in irreduceable relations of nomic necessitation. This relation is itself a universal - a second order universal.[30]

Since universals are wholly present whenever and whereever they are instantiated, the universals **N, F,** and **G** are wholly present in each spatiotemporal region where the law is instantiated.[31]

Although it is not logically necessary that the universals **F** and **G** are related by **N**, it is logically necessary that if this relation obtains then all **F's** are **G's.** But the converse entailment does not hold; the Humean regularity **(x)(Fx Gx)** does not entail **N(F,G).**[32]

Armstrong raises the question of whether it is possible that **N(F,G)** obtains at some time in the past but does not obtain in the future:

> Suppose that the universal **F** is related to the universal **G** in such a way that **F's** are **G's**. Might it not happen that at a certain point in time **F** and **G** come to be related in a different manner, so that it is no longer the case that **F's** are **G'**s? ... to argue in this way is to fail to see what a relation between universals is like. If **F** and **G** are related by a dyadic relation, a relation whose terms are confined to these two universals, then it cannot be that they have this relation at one time and place, yet lack it at another. The universals **F** and **G** are exactly the same thing at their different instantiations... As a result, there can be no question of their

being related in a certain way at one time and place, yet not being related in that way elsewhere.[33]

Armstrong's account seems to contain the ingredients necessary for arguing from the controversial claim to incompatibilism. Armstrong holds that what makes the law-statement `**N(F,G)**' true is a fact about the spatiotemporal region in which the law is instantiated. But the truth of this fact, together with a fact about the world at time t, **a's being F**, logically necessitates a fact about a future time t* - **a's being G.** The claim is that relations between universals can do the trick that singular causal connections could not do; they can guarantee that the future will be like the past.

But there is a problem. Suppose that an agent's action is the first instantiation of a law. That is, suppose that at time t the agent has instantiated **F**, but has not yet instantiated **G**, and there have been no previous instantiations of **N(F,G).** In that case, the truthmaker of the law-statement is a fact about the future relative to t, and the controversial claim together with the truth of Armstrong's account of laws is consistent with a determined agent being able to do otherwise. Someone who wants to use the controversial claim to argue that such agents cannot do otherwise will have to argue that the law **N(F,G)** is a fact about the world at time t even though it has not yet been instantiated at t. Can Armstrong argue this? It seems contrary to his view that universals exist only whereever and whenever their instances exist. To argue that a law is a fact about the world at those times during which the relevant universals are not instantiated may require the defence of platonic realism, which does not identify universals with their instantiations and which recognizes the possibility of uninstantiated universals.[34]

Still, even if Armstrong's account together with the controversial claim does not entail the claim that no determined agent is ever able to do otherwise, the two claims taken together exclude compatibilism. Compatibilism is often thought of as the denial of the incompatibilist thesis that no determined agent can ever do otherwise. But the positive compatibilist thesis is that the truth or falsity of determinism has no bearing on the question of whether we are able to do otherwise. If Armstrong's view of laws and the controversial claim are both correct, then this is false. Being able to do otherwise requires either that the relevant law is an indeterministic one or that the agent's act is the first instantiation of a deterministic law.

I've shown that this argument for incompatibilism requires the truth both of the controversial claim and of an account of laws according to which facts about the laws are facts about the past which, together with other facts about the past, logically determine facts about the future. An account of laws as relations between universals seems to be the kind of account that is needed. Does this mean that the defence of incompatibilism requires the defence of realism about universals? Perhaps not. But until someone provides an alternative nonHumean account of laws or another argument for the claim that the laws must be kept constant, realism about universals is the only incompatibilist game in town.[35]

Notes

[1] The most famous of these is Frankfurt's `Alternate Possibilities and Moral Responsibility', Journal of Philosophy LXVI (1969), pp.829-839. More recently, Daniel Dennett has defended the claim in Elbow Room: The Varieties of Free Will Worth Wanting (Bradford Books, 1984), at pp.131-152.

[2] This seems obvious, and has been known since it was pointed out by Hume. But rigorous argument about the way in which laws of nature constrain the powers of agents is surprisingly hard to find. The modal arguments for incompatibilism defended by Carl Ginet (`In Defence of Incompatibilism', Philosophical Studies 44 (1983), pp.391-400) and Peter van Inwagen (An Essay on Free Will, Oxford: Clarendon Press, 1983) rely on a `necessity of laws' premise, but this is defended only by appealing to the belief that we have no choice about (van Inwagen) or have no power to falsify (Ginet) the laws of nature. There is no attempt to defend the view of laws which supports this belief, or even to specify the content of the belief - is it that we cannot cause the laws to be different or is it that the laws (in some relevant sense) cannot be different, regardless of whether we are the cause of their being different?

[3] Michael Slote suggests that the incompatibilist does not need to assume any `mysterious' necessity in the laws because `another explanation of our inability to alter them would be some weakness or lack in us'. `Selective Necessity and the Free-Will Problem', Journal of Philosophy LXXIV (1982), pp.5-25.

[4] Unfortunately, some compatibilists have thought that `can' claims are conditional or `hypothetical' on the obtaining of a desire - that `S can do x' means `if S wanted to do x, she could do it.' For a discussion of the problems with this account, see J.L Austin's `Ifs and Cans', Philosophical Papers, (Oxford University Press, 1961).

[5] Some supporters of the controversial claim have made this point by saying that ability claims take the form `S at time t is able to do x at time t*', where t* is later than t. But I think that this is a mistake. It's true that an ability is exercised at a particular time. But what an agent is able to do is an act of a certain kind (running, running a four minute mile), not an act-

at-a-particular time (running a four minute mile at two o'clock today).

[6] All my remarks concerning facts about the world at a time should be understood as referring to facts thus understood, as opposed to facts about grue, being the mother of the next prime minister, and so on.

[7] Or `if she chose (willed, tried, intended, wanted) to do x, she would'.

[8] This is a counterexample to any conditional analysis that takes as its antecedent some occurrent mental state of the agent - choosing, intending, wanting, etc. Peter van Inwagen has a good discussion of this and other counterexamples at pp.114-121 of An Essay on Free Will, ibid.

[9] The coma case is an example. From the description that I gave, it's not clear whether the person has lost the ability to move her limbs (she's been in the coma so long that her muscles have degenerated) or whether she retains the ability, but is unable to exercise it because she is unable to engage in any mental activity and thus unable to choose, decide, will, or try to move her limbs.

[10] If the laws of our world are deterministic and if they must be kept constant in any test of what an agent is able to do. (We will be questioning the latter assumption in the next section.)

[11] The best argument for this thesis currently in the literature is the modal argument defended independently by Ginet and van Inwagen. (See note 2.) I argue, by way of two counterexamples, that it is not valid in `The Modal Argument for Incompatibilism', Philosophical Studies 53 (1988), pp.227-244.

[12] Note that I am here talking about a Humean view of laws. Contemporary Humeans generally make two claims: that event e caused event f just in case e and f instantiate a law of the relevant kind, and that laws are a subset of the regularities of the world. David Lewis, who analyses causation in terms of counterfactual dependence, rejects the first claim but accepts the second. (`Causation', Philosophical Papers II, Oxford University Press, 1986.)

[13] Norman Swartz (The Concept of Physical Law, Cambridge University Press, 1986) is one of the few contemporary Humeans who argues for compatibilism by defending his

account of laws: "It is partly up to us to decide what the grand physical truths (physical laws) of the world are. By choosing to do this rather than that, we `make' it a timeless truth of this world that, in such and such circumstances, persons do this ... If a person is in a unique situation and chooses B, then his choosing something else that is logically inconsistent with B, for example, C, is physically impossible; nonetheless, his choosing C may well have been unconditionally possible." (pp. 123-127)

[14] Nelson Goodman: `Rather than a sentence being used for prediction because it is a law, it is called a law because it is used for prediction.' (Fact, Fiction, and Forecast, Athlone Press, 1954.)

[15] Brian Skyrms, Causal Necessity (Yale University Press, 1980).

[16] Frank Ramsey, `General Propositions and Causality' in D.H. Mellor,ed., Foundations, (Routledge & Kegan Paul, 1978). David Lewis defends a modified version of the Ramsey account in Counterfactuals (Blackwell, 1973).

[17] Elizabeth Anscombe defends a singularity view of causation in `Causality and Determination', Metaphysics and the Philosophy of Mind (Cambridge University Press, 1981).

[18] It is also compatible with nonHumean accounts of law, including the view that laws are relations between universals.

[19] C.J. Ducasse defends a view of this sort in `On the Nature and Observability of the Causal Relation', Journal of Philosophy, XXIII (1926), pp.56-67.

[20] Since the controversial claim tells us to hold facts about time t constant, we should restrict ourselves to those nomological facts which are facts about time t alone thus excluding facts about the past as well as facts about the future. But if we read the first condition in this way, then we are restricted to those laws which are instantiated at time t. This seems unsatisfactory, since it is a contingent matter whether all or only some of the laws are instantiated at any given time. Since incompatibilist arguments often use a `fixity of the past' premise (an agent is able to do otherwise only if there is a world with exactly the same past at which she does otherwise), I will allow facts about the past to be counted among the truthmakers of law claims. If the argument for incompatibilism does not

succeed given this more generous reading of what facts are relevant, then it will not succeed on any stricter reading.

[21] Does this mean that a compatibilist needs only to establish the truth of a Humean account of laws? Not quite. An incompatibilist might argue as follows: "If determinism is true, there may be possible worlds just like our world until time t at which someone does otherwise at t*. But these are all worlds with different laws. Since no agent has causal power over the laws, these worlds are not worlds at which the agent does anything she is in fact able to do. So no determined agent is ever able to do otherwise." I give a compatibilist reply to this argument in "Freedom, Causation, and Counterfactuals", *Philosophical Studies* 64 (1991), 161–184.

[22] `Laws of Nature', Philosophy of Science 44 (1977), pp.248–268.

[23] `The Nature of Laws', Canadian Journal of Philosophy 7 (1977), pp.667–698, and Causation: A Realist Approach (Oxford: Clarendon Press, 1987).

[24] What Is A Law of Nature? (Cambridge University Press, 1983).

[25] Universals and Scientific Realism (Cambridge University Press, 1978).

[26] Because `green' applies to things that are different shades of green.

[27] Ibid., p.43.

[28] Armstrong, 1983.

[29] Armstrong is silent on the problem of free will, but it is interesting that his solution to the problem of induction (pp. 103–106, Armstrong, 1983) appears to give the incompatibilist just what she needs to make the argument go through. If Armstrong wants to be a compatibilist, he must reject the controversial claim. His remarks about determinism and counterfactuals (pp.49–50) suggest that this is what he would do.

[30] Armstrong, 1983, p.92

[31] Armstrong also argues that the second order state of affairs **N(F,G)** is simultaneously a first order universal

instantiated by each instance of the law. Ibid., pp.88-99.

[32] Ibid., pp. 85-88.

[33] Ibid., pp.78-79.

[34] My thanks to Robert Bright for helping me see that this is a problem for Armstrong's account of laws. An anonymous referee for this journal has pointed out that Michael Tooley discusses this problematic feature of Armstrong's account at pp. 307-308 of Causation: A Realist Approach. Tooley defends a kind of platonic realism about universals.

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