

Causality and Generality in the <u>Treatise</u> and the <u>Tractatus</u> Herbert Hochberg *Hume Studies* **Volume XII, Number 1 (April, 1986) 1 - 17.**

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CAUSALITY AND GENERALITY IN THE TREATISE AND THE TRACTATUS

In the <u>Tractatus</u> Wittgenstein cryptically rejects the existence of a causal connection (or relation or nexus):

- 5.135 There is no possible way of making an inference from the existence of one situation to the existence of another, entirely different situation.
- 5.136 There is no causal nexus to justify such an inference.
- 5.1361 We <u>cannot</u> infer the events of the future from those of the present. Belief in the causal nexus is <u>super</u>stition.¹

And he later proceeds to add:

6.37 There is no compulsion making one thing happen because another has happened. The only necessity that exists is logical necessity.

What he is claiming can be understood in terms of the "Logical Atomism" of the Tractatus. Atomic sentences, composed of a monadic predicate or a relational predicate and a suitable number of subject terms, represent situations or possible facts. The existence of a represented situation is the ground of truth for (or condition for the truth of or explanation of the truth of) the representing atomic sentence. We can consider such atomic situations or atomic facts² to be composed of monadic property or relational property and а an appropriate number of particulars. (This is a matter of some debate among interpreters of the Tractatus, but that issue does not really affect the question at issue in this paper. So, I will simply treat the view in the <u>Tractatus</u> along the lines of Russell's more explicit version of logical atomism in his lectures of 1918.)

The world, according to Wittgenstein, is made up of such facts. This is the point of:

- 1.11 The world is the totality of facts, not of things.
 - 1.12 The facts in logical space are the world.

1.13 The world divides into facts.

Consider, then, the claim that a's being F is the cause of its being G. This suggests that we construe causality in terms of a relation between the situations represented by 'Fa' and 'Ga'. With 'C' representing a relation or nexus of causality, we could express that <u>situation</u> by:

C(Fa,Ga).

The existence of the situation represented by (1) would then ground or explain the truth of (1). But that would mean that we recognize a relation of causality and causal relations between facts or situations. I cannot here argue, but will simply assert, that Wittgenstein's logical atomism in the Tractatus is incompatible with the recognition of relations between facts. However, one point that will be relevant to the concerns of this paper is easy to see. Logical atomism involves the claim --Each item can be the case or not the case while 1.21 everything else remains the same. This is not compatible with the recognition of the relation C and a fact grounding the truth of (1), for then $F\alpha$ and $G\alpha$ would not be items that were "independent" in the sense of 1.21. Hence, one who holds Wittgenstein's views about the independence of atomic facts cannot recognize causal relations between such facts. Thus, no fact is represented by (1) and C cannot relate atomic facts. The same results would hold if one suggested, in place of (1), that there was a fact corresponding to

(2) (x)(Fx + Gx),

where we read the arrow as the "causal" arrow --anything's being F causes it to be G. For, if there were a fact corresponding to (2), it would guarantee the link between the purported atomic facts Fa and Ga, since

(3) Fa + Ga would be a logical consequence of (2), and we are back to a case like (1), with the arrow replacing 'C'. (2) would also be problematic in that it would be some sort of "general" fact, which Wittgenstein also rejects.³ Thus, as Wittgenstein sees it there is no basis in the world for the explanation of causal statements.

If the sentence

(4) $'(x)(Px \supset Gx)'$ is a statement of causal law is true, it is so simply because the list of atomic facts will contain the atomic sentence 'Ga' if it contains 'Fa'. That is, (4) is true, not because of any special fact corresponding to

(5) (x)(Fx ⊃ Gx)

but because of what atomic facts exist. Thus, the phrase "causal law" in (4) does not represent anything in the world and neither (3) nor (4) nor (5) expresses a fact that belongs to the "totality of facts" that <u>is</u> the world. This contrasts with 'Fa' which represents an existent fact and 'F' which represents a property.

Wittgenstein's view forces a distinction upon us. He recognizes neither a fact represented by (5) nor one represented by (2). We may then say that he recognizes neither special causal or necessary connections, as expressed in (2), nor general facts, as expressed in (5), as the truth grounds for purported statements of natural or causal law. Having no such truth conditions, there no causal connections at all and causality are is dismissed. But, the rejection of general facts may be said to be stronger than the rejection of causally necessary facts. We can see why if we note that (2) is also a "general," i.e. universally quantified, statement.

In fact, we can make the point more obvious by considering an alternative way of introducing causal facts. In place of (4), consider

(6) $'(x)(Fx \supset Gx)'$ states a causal necessity, which we take to claim that a general fact is causally necessary, and which we "perspicuously" represent by

(7) $|\cdot|(x)(Fx \supset Gx)$, with $|\cdot|'$ representing a "mode" of <u>causal necessity</u> applicable to facts. Thus, some general facts are held to be merely general facts, while others -- those that "ground" statements of causal law -- are held to be <u>causally necessary general facts</u>. It is then clear that on such an analysis one who rejects all general facts also rejects "modal" general facts.

We may now distinguish between general facts, that would ground the truth of statements like (5), and <u>causally necessary</u> general facts that would ground the truth of statements like (6) or (7). Wittgenstein will not allow for either. Thus, if one were to say that, on Wittgenstein's view, there are only constant conjunctions and not causal connections, he could mean one of two things. First, he could mean there are no special causal facts of the kind purportedly represented by (7) and, hence, that ' $|\cdot|$ ', like 'C' and the arrow, does not correspond to "anything" in the world. Second, he could mean that there is no general fact represented by (5). Hence, <u>generality</u>, or the quantifier sign, does not represent anything. Wittgenstein means both.⁴

One of my concerns in this paper is whether Hume's more celebrated "attack" on causal connections being in the world recognizes the distinction we have just noted and, consequently, whether his attack, like Wittgenstein's, is directed at both unique causal relations in the world <u>and</u> at any factual basis for statements of natural law other than atomic facts. Or,

is Hume's attack limited to the rejection of unique causal relations and facts containing them.

It is clear, I think, that Hume intends to reject any factual ground other than sets of conjunctions to ground statements like (4) and (5) -- I ignore for the moment whether Hume's analysis involves an additional "psychological fact." Since, for Hume, the idea of connection involves the causal idea of necessary connection, one might think that Hume's view precludes the use of a general fact, represented by (5), to ground the truth of (4). For, unlike the fact purportedly represented by (2) or (7), there appears to be no necessary connection involved in the appeal to a general fact represented by (5). Yet, there is: and this point reveals a fundamental omission in the standard Humean rejection of necessary connections "in the external world." For, given that there is a general fact represented by (5), the fact that a is F is necessarily connected with the fact that a is G. In short, given the existence of the two facts -- the general fact that all F's are G's and the atomic fact that α is F -- it is logically necessary that a is G, and hence that the atomic fact, a's being G, exists. The existence of the general fact supplies the necessary connection between the two atomic facts. What is interesting about this alternative grounding of causal laws is that the only notion of necessity involved is that of logical necessity (which Hume also took to be contributed by the mind).⁵ In short, one can speak of a necessary connection, on such an analysis, without facing the standard Humean arguments about the "idea" of necessity. These would be raised on the other alternatives in terms of questions about the meaning of the arrow, 'C', and the operator '|•|'. To push the Humean-empiricist line of attack regarding the viability of the concept of necessity involved would force one to defend a Humean approach to

the concept of "logical necessity", which is far more problematic. Humeans, generally, have made the mistake of overlooking this appeal to general facts and have concentrated on arguing against the existence of facts involving a special relation or operation of causality or necessity, such as + or $|\cdot|$.⁶

One might object to the appeal to a general fact by claiming that such a general fact will not suffice as a truth condition for causal laws, since we will not be able to distinguish between accidental generalities and lawful generalities. There is a reply to the objection. But, to grasp the force of it we should note something first. The anti-Humean who adopts something like (2) or (6) may hold that an accidental generality, or a trivial true generality involving an "empty" predicate in the antecedent, is true either in virtue of a general fact or simply in virtue of appropriate atomic facts existing or not. If he takes the former view, he would distinguish causal laws from accidental generalities by the kind of general fact that grounds the different type of true generality. If he takes the latter alternative, he distinguishes them in terms of causal laws being grounded by special causal facts, while accidental generalities are true in virtue of a set of conjunctions being true and others false (i.e. certain atomic facts existing and others not). Likewise, one who appeals to general facts to ground the truth of lawful generalities may hold that, in the case of accidental generalities or trivial generalities, no general facts are involved. The facts that comprise the truth conditions are simply the atomic facts that provide the truth conditions for the relevant conjunctions. Thus, if $'(x)(Fx \supset Gx)'$ is a case of an accidental generality, the truth conditions would be provided by the atomic facts that are the truth conditions for the conjunctions:

(8) Fa & Ga, FB & GB, ...

and the absence of any true conjunction of the form 'Fx & \sim Gx'.⁷ The anti-Humean who appeals to general facts to ground causal laws thus recognizes a special fact is such a case, but not a special "necessary connection." And, he distinguishes such cases from cases of accidental or trivial generality by the absence of a general fact in the latter cases.

The appeal to general facts reveals a weakness in the standard Humean attack on "necessary connections."⁸ It shows that the Humean must do more than attack a special relation or nexus of <u>causality</u> or <u>necessity</u> if he is to preserve Hume's claim:

> Upon the whole, necessity is something, that exists in the mind, not in objects; nor is it possible for us ever to form the most distant idea of it, consider'd as a quality in bodies. Either we have no idea of necessity, or necessity is nothing but that determination of the thought to pass from causes to effects and from effects to causes, according to their experienc'd union.

For an anti-Humean may hold, with the Humean, that there is no special relation of causality or necessary connection and yet hold that there is a factual condition, over and above the existence of the facts that ground the truth of conjunctions, that grounds the truth of a statement of causal law. (Notice that this is, as some put it, an "ontological" point. It has nothing to do with the question of how we know, if we ever do, when general facts as there are such opposed to mere conjunctions.¹⁰) The anti-Humean proponent of general facts may even suggest that there is an ambiguity in the that "constant conjunctions" idea and not causal connections" provide the truth conditions for statements of causal law. For, in one sense, a general fact may be "constant conjunction" or taken to be a "mere uniformity," by contrast with a purported fact expressed by (2) or (7). In another sense, a general fact is not a

constant conjunction when contrasted with a set of conjunctive statements whose truth conditions are provided by the existence or non-existence of atomic facts (or even with "conjunctive facts," if one accepts such entities).

The Humean, like Wittgenstein, should then argue against general facts. And, while we cannot have expected Hume to worry explicitly about quantification, there are Humean themes that suggest he would reject There are at least two of these. The treatment of them. general ideas would suggest that 'All F's are G's' would be understood in terms of a specific case being construed "generally."¹¹ (We may ignore the question of whether, for Hume, the specific case that is construed generally is treated as a conditional or a conjunction.) And. Hume's discussion of causality involves the claim that an assertion like (1), or (2), or (3) is justified by the occurrence of several conjunctions, those listed in (8), along with the experience of a "determination of the thought" or a "feeling"¹² that is occasioned by the experience of such conjoined conditions. It would appear that, for Hume, the experience of this determination or feeling would enter into the specification of the truth condition for a statement like (4).¹³ Thus, there is an "psychological" fact that would added partially constitute the truth condition for (4). In the case of accidental generalities such a psychological fact would Contemporary Humeans have attempted absent. be to replace, or explain, this psychological feature by alternative conditions, in particular by the use of a gambit derived from the structure of coherence theories of truth. I am speaking of the attempt to distinguish lawful generalities from accidental generalities by holding that lawful generalizations "fit" into a context of other generalities with specific deductive connections obtaining among them.

It is not surprising that a Humean should seek to make use of such a pattern. For coherence accounts of truth, as opposed to the correspondence accounts, usually go along with the variants of idealism (including pragmatism), while correspondence theories, in turn, generally are typical of realistic philosophies (as in the obvious case of Moore and Russell and their attack on British idealism in the first two decades of this century). Α Humean account of causality is, in an obvious sense, an idealist account of causality, though it may occur as an otherwise realist metaphysics, with part of the location of causal connection "in the mind" and not "in objects." The anti-Humean accounts we have been considering are, by contrast, realistic accounts in that they seek to locate a special ground for causal laws in the external world, and not in our reaction to it, i.e., not "in the mind."

However, it is not at all clear that one can the "idea" of generality involved account for in universal quantification in Humean fashion. for Nor, that matter, does it appear that the Humean avoids the recognition of general facts by Hume's standard attack on a necessary connection being in the world, as opposed to being "in the mind." Recall that a crucial aspect of Hume's argument is that a necessary connection is not observed in one case and that the "idea" of necessity does not arise from the observation of a single case. It is only after "constant conjunctions" are noted that the mind is "determined" to move from the idea of the cause to the idea of the effect (and vice versa). But. this line of argument cannot be used when the locus of necessary connection is taken to be a general fact. For, one cannot observe the obtaining of of course, the relevant general fact by observing one case.

It also is not clear that Wittgenstein's analysis of generality fares better, since there are two

fundamental arguments against his rejection of general The first concerns his construal of universal facts. quantification in terms of conjunction.¹⁴ The standard argument against so construing the quantifier is that to define the universal quantification sign in terms of conjunction prevents the application of the definition in the case of quantification over an infinite domain of objects. One must incorporate some device such as a series of dots or use the phrase "and so on" to indicate that the conjunction "goes on" infinitely. This is hardly acceptable. However, this objection is based on a misconstrual of Wittgenstein's view. He is not offering a definition of the quantifier. What he is doing is allowing for a conjunctive function that can take an infinite number of facts as arguments. Such an infinite conjunctive function is represented by the universal quantification sign in Wittgenstein's ideal Tractarian language.¹⁵ Thus, he is not defining the quantification sign, he is acknowledging an infinite function, in the above sense, and representing it by an undefined and, obviously, finite expression, '(x)'. The second argument is Russell's. In addition to any list of atomic facts or of conjunctions, one would have to add that those were all. Thus we are back to a purported general fact. But this is an argument of a different sort, which we need not attempt to resolve here. The point I am concerned with is that Wittgenstein does have, at least prima facie, a way of treating the concept of generality involved in guantification, and that can lead him to dismiss the general facts that would ground purported causal laws (irrespective of whether we would still have to recognize one sort of meta-fact to the effect that the atomic facts that existed were all the atomic facts). The question that is raised for the Humean is whether Hume has a way of treating generality that would buttress his attack on causality in the way Wittgenstein's

analysis supports <u>his</u> rejection of causal connections. Aside from the problematic nature of Hume's treatment of general terms, it is not at all clear how he could handle the question about quantification, even granting his handling of predicates in nominalistic fashion.¹⁶ But there is another line of argument open to the Humean. Before proceeding to that, let us recall a few points.

One problem with a view that seeks to introduce special causal facts like those purportedly represented by (2) and (6) involves the problematic notions expressed by the arrow and $|\cdot|\cdot|$, that are taken as primitive. These are targets for standard Humean-empiricist type questions about "meaning" and "acquaintance." But the appeal to general facts to ground laws of nature does involve the introduction of such not problematic Moreover, it is not clear how Hume could concepts. handle questions about the universal quantifier. Of course, one could suggest that Wittgenstein's attempt to treat universal quantification in terms of conjunction is in keeping with the spirit of Hume's empiricism and the latter's dismissal of necessary connections as relations in the world. One could even attempt to link Wittgenstein's infinite conjunctions with another determination that the mind observes about itself (to go on without end, instead of going from one idea to Thus, we could take the doctrine of the another). Tractatus to fill a gap in Hume's treatment of causality and generality. But, the Humean has another line of argument against the attempt to ground the truth of statements of law by either purported universally general facts or special facts involving a special causal relation or necessity operation. In the first place, just as + are |. | are problematic components of facts, no philosopher, including Russell, has offered a viable analysis of a general fact or what it means to take the universal quantifier as representative of some repeat or

feature of certain facts. The best Russell could do was speak of the "form" of facts, particularly in his early manuscript Theory of Knowledge.¹⁷ This recognition of did not help with the specification of forms such quantification, which was an obvious universal constituent of such forms. Nor does the notion of a quantifier as a higher order function of functions help much for philosophical purposes. For one thing, we presuppose the recognition of contexts like 'Fx \supset Gx' as representing properties or functions which are then arguments for the higher order function that the universal quantifier (not the sign) is taken to be. Ĩn the second place, there is a fundamental objection to all non-Humean alternatives that recognize special causal or general facts as the truth conditions for statements law.

One does not hold that there are facts, like those represented by (1), (2), (5), and (7) in virtue of discovering ordinary states of affairs. Rather, we hold that a generality is a statement of law in virtue of its fulfilling a set of criteria that distinguish accidental generalities from genuine laws. The anti-Humean may then hold that when а generality philosopher satisfies the criteria it does so because there is a fact of the supposed kind. We thus supposedly explain why some generalities satisfy the criteria. Yet, whatever criteria we may choose, a Humean can insist that a generality being a law can be understood simply in terms of the generality satisfying the criteria. This gives a difference and the only difference between accidental generalities and lawful generalities. The anti-Humean must face this obvious fact. What he then does is simply postulate some condition that supposedly explains why some generalities satisfy the criteria and others do not. But, then, he faces a dilemma. For if we ask why such special facts are required to explain the generalization's being a law, he either has no answer or must say

that such facts are acknowledged for the purpose of providing an explanation of a generalization's being a law. In other words, the only explanation open to him is Moreover, he cannot argue that we must an empty one. accept such special facts since the Humean position cannot distinguish laws from accidental generalities. For, the Humean can use whatever criteria the anti-Humean employs to decide when there is a special fact. This is the import of our earlier observation that the special facts appealed to as the "ontological ground" for a law are not discovered as ordinary facts are. This, not surprisingly, is merely a version of Hume's point about not observing necessity as well as an aspect of the problem of induction. An anti-Humean may seek to rebut this charge of vacuity by the following argument.

The anti-Humean asks us to consider the problem of universals. Concisely put, a realist recognizes universal properties in order to ground the truth of the ascriptions of the same predicate to different objects and to be able to characterize the truth conditions for atomic sentences.¹⁸ Likewise, it may be argued, we must recognize the existence of a truth condition for claims that a generality is a statement of law and not an accidental generality. The anti-Humean, purportedly, makes the same sort of move as the realist about universals does. And, he argues that a Humean about causality cannot consistently be a realist about universal properties, as many logical atomists are. (This ignores the view of a Humean nominalist who, while not being affected by such an argument, is taken, like all nominalists, to be mistaken.) The argument misses a crucial point. A Humean about causality, who is a realist about universals, can offer truth conditions for the claim that a generality is a law. The conditions are specified in two parts. First, there are the atomic facts, the existence and non-existence of which ground 14

the truth and falsity of the appropriate conjunctions. Second, the generality must satisfy the criteria mentioned earlier. Such criteria may specify the existence of a context of other generalities logically connected in definite ways to the purported law. They may also refer to further atomic facts relevant to these additional generalities.¹⁹ A viable Humean analysis will seek to specify truth conditions for statements of law in order to distinguish them from accidental generalities. This does not mean that a Humean must accept special facts as such truth conditions. We may, then, conclude that the introduction of general facts ultimately fares no better than do the other non-Humean alternatives we have considered, though it avoids some additional problems they face. We may also note how the views on quantification and generality in the Tractatus support one of the most celebrated themes of the Treatise.

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- References to the <u>Tractatus</u> are to the translation by D.F. Pears and B.F. McGuinness (London: Routledge & Kegan Paul, 1961).
- In dealing with atomic facts and situations in the <u>Tractatus</u> one runs into the problems posed by <u>possibilities</u> and <u>negative facts</u>. These problems are not really germane to the issues discussed in this paper and I have dealt with them elsewhere. See H. Hochberg, "Possibilities and Essences in Wittgenstein's <u>Tractatus</u>," in E.D. Klemke, ed. <u>Essays on Wittgenstein</u> (Urbana: University of Illinois Press, 1971), pp. 485-533, and "Negation and Generality," <u>Nous</u>, III, 3, 1969.

- For discussions of the kinds of facts Wittgenstein's 3. atomism involves see "Possibilities and Essences in Negation Wittgenstein's Tractatus" and and Generality". Some key sentences in the Tractatus for getting at Wittgenstein's views about general facts are 5.3, 5.52, 6, and 6.001. There is also the testimony of Ramsey, see note 15 below. Admitsuch as tedly, though, there are other passages, 5.521, that complicate the discussion of his views. this situation is typical in dealing with the But, <u>Tractatus</u> and the problematic passages can, I believe, be handled. The point to keep in mind is that the question is basically about general facts not merely about the concept "all" and or а purported definition of the sign for universal quantification.
- One of the cardinal points of the <u>Tractatus</u>, recall, is that logical signs do not represent.
- 5. Hume writes: Thus as the necessity, which makes two times two equal to four, or three angles of a triangle equal to two right ones, lies only in the act of the understanding, by which we consider and compare these ideas.... A <u>Treatise of Human Nature</u>, ed. L.A. Selby-Bigge (Oxford: The Clarendon Press, 1955), I, xiv, p. 166.
- 6. This is quite understandable since Hume always puts the question in terms of whether or not necessity lies in the objects considered. He does not think in terms of facts.
- On the need to appeal to both kinds of conjunctions see H. Hochberg, "Dispositional Properties," <u>Philosophy of Science</u>, 34, 1967, and F. Wilson, "Dispositions: Defined or Reduced?," <u>Australasian</u> <u>Journal of Philosophy</u>, 47, 2, 1969.
- For example, in "It Ain't Necessity, So" Alan Hausman writes:

All statements of laws of nature are on Hume's view descriptions of constant conjunctions, the logical form of which is captured by the Russellian $"(x)(fx \supset gx)$." Hume Studies, VIII, 2, 1982.

It is not just that such a characterization will not do due to the reasons given in "Dispositional Properties," see note 7, but that Hausman completely overlooks the possibility of appealing to general facts.

- 9. <u>Treatise</u>, I, xiv, pp. 165-166. I find it puzzling that Wade Robison can argue "in the <u>Treatise</u> at any rate Hume was concerned not with causal relations, but with causal judgments." <u>Hume Studies</u>, VIII, 2, 1982. Of course, Hume was concerned with causal judgments but he was certainly concerned to argue that an external causal relation cannot be found and must be rejected.
- 10. This suggests, of course, an epistemological line of argument that is also part of the Humean attack on necessary connections in the world. But that is another matter.
- 11. <u>Treatise</u>, I, vii, pp. 20-22.
- 12. Recall the well-known passage in the Treatise that has occasioned so many discussions: Tho' the several resembling instances, which give rise to the idea of power, have no influence on each other, and can never produce any new quality in the object, which can be the model of that idea, yet the observation of this resemblance produces a new impression in the mind, which is its real model. new For after we have observ'd the resemblance in a sufficient number of instances, we immediately feel a determination of the mind to pass from one object to its usual attendant, and to conceive it in a stronger light upon account of that relation. ... Necessity, then, is the effect of this observation, and is nothing but an internal impression of the mind, or a determination to carry our thoughts from one object to another. I, xiv, p. 165.
- 13. I take this to be implicit in the passage cited in note 12 and the context supplied by the rest of section xiv.
- 14. It is literally not conjunction but Wittgenstein's function, or "operation," N. For an explanation of that function see my "Arithmetic and Propositional Form in Wittgenstein's <u>Tractatus</u>," in H. Hochberg, Logic, <u>Ontology</u>, and Language (Munich: Philosophia Verlag, 1984), pp. 315-316.
- 15. It would take a lengthy discussion to defend this assertion as there are no clear-cut statements in the <u>Tractatus</u> that one may appeal to. I am greatly influenced in taking this interpretation by Ramsey's discussion of Wittgenstein in "Mathematical Logic" in F.P. Ramsey <u>The Foundations of Mathematics</u> (Paterson: Littlefield, Adams, & Co., 1960), p. 77, and by his use of such a view in critical

discussions of Russell in the paper "The Foundations of Mathematics" in that book.

- 16. It is worth pondering how a Humean could apply Hume's discussion of abstract and general ideas to the abstract idea of "generality."
- 17. For a discussion of Russell's views on logical form see H. Hochberg, "Logical Form, Existence, and Relational Predication," in <u>Foundations of Analytic</u> <u>Philosophy</u>, ed. P. French, <u>et. al</u>, (Minneapolis: University of Minnesota Press, 1981).
- 18. Recently the old appeal to second order properties has been revived as an alternative way of introducing necessary connections. I do not bring that up here as that alternative is neither relevant to nor adds to the main points of my discussion. Moreover, I have already criticized that position in "Possibilities and Essences in Wittgenstein's <u>Tractatus</u>," and in "Natural Necessity and Laws of Nature," Philosophy of Science, 48, 3, 1981.
- 19. I am not claiming either that the attempt to provide such a contextual setting for this variant of the Humean position is unproblematic or that it has been adequately worked out. In fact, it is the focus for many arguments attacking contemporary Humean analyses of causality. But that is another, though obviously crucial, topic.