



UNIVERSITY OF LEEDS

This is a repository copy of *Does Anything Hold the Universe Together?*.

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/183830/>

Version: Accepted Version

Article:

Beebe, H orcid.org/0000-0001-7650-3622 (2006) Does Anything Hold the Universe Together? *Synthese*, 149 (3). pp. 509-533. ISSN 0039-7857

<https://doi.org/10.1007/s11229-005-0576-2>

© Springer 2006 This is an author produced version of an article, published in *Synthese*.
Uploaded in accordance with the publisher's self-archiving policy.

Reuse

Items deposited in White Rose Research Online are protected by copyright, with all rights reserved unless indicated otherwise. They may be downloaded and/or printed for private study, or other acts as permitted by national copyright laws. The publisher or other rights holders may allow further reproduction and re-use of the full text version. This is indicated by the licence information on the White Rose Research Online record for the item.

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



eprints@whiterose.ac.uk
<https://eprints.whiterose.ac.uk/>

Does Anything Hold the Universe Together?

Helen Beebe

Please do not cite this version. The published version is: ‘Does Anything Hold the Universe Together?’, *Synthese* 149 (2006), 509-33

1. Regularity theories of causation

One of the hallmarks of traditional empiricism has been the repudiation of entities that are deemed to be mysterious, ineffable or too far removed from our experiential reach. Purported entities that have come under attack from empiricist quarters include universals, immaterial substances, the unobservable entities postulated by scientific theories, and even the material world. One purported feature of the world that has often been thought to fall foul of respectable empiricist principles is causation. Hume famously argued that our experience of the external world does not furnish us with any ‘impression’ of a connection between cause and effect; hence we cannot have any idea of any such connection. He concluded that:

When we talk of any being ... as endowed with a power or force, proportioned to any effect; when we speak of a necessary connexion betwixt objects, and suppose, that this connexion depends upon an efficacy or energy, with which any of these objects are endowed; in all these expressions, *so apply'd*, we have really no distinct meaning, and make use only of common words, without any clear and determinate ideas’ (1978, 162).

What was the hard-line empiricist to do, given the (alleged) lack of empirical respectability of the concept of causation, as something that binds the goings-on in the universe together? Two basic strategies presented themselves. One was simply to shun the concept of causation all together. Thus Russell claimed that ‘the law of causality’ was ‘a relic of a bygone age, surviving, like the monarchy, only because it is erroneously supposed to do no harm’ (1913, 1). And, in similar vein, Jack Smart is very fond of saying, ‘Causation? Pah! It’s all right for plumbers and brain surgeons!’.

The point behind both remarks, I take it, is that the concept of causation is one we employ in everyday life in order to get by, but it's one which, if we had enough scientific knowledge, we (unlike actual brain surgeons and plumbers) would be able to avoid. And, I suppose, the thought is that we would be able to avoid it because the language of science – or at least the language of fundamental physics – does not make use of the concept of causation.

Whatever one thinks of that view, it's certainly true that there was a fairly long period in the 20th century when large numbers of philosophers made every effort not to appeal, ever, to the concept of causation. Thus, for example, Peter van Inwagen says of 'cause' that it is a 'horrible little word', and adds: 'Causation is a morass in which I for one refuse to set foot. Or not unless I am pushed' (1983, 65). John Earman calls it a 'truly obscure' concept (1986, 5). Much of the twentieth-century literature on the problem of induction provides another example. Despite Hume's fundamental insight that causation lies at the heart of all our 'reasonings' concerning matters of fact, much of that literature concentrates solely on the inference from 'all observed *F*s have been *G*s' to 'all *F*s are *G*s', thus effectively abandoning the thought that causation and induction have anything much to do with each other.

Unfortunately, trying to do philosophy without ever using the concept of causation is practically impossible: philosophers need the concept every bit as much as do plumbers and brain surgeons. Consider the huge range of fruitful philosophical theories that *do* appeal to causation: we have causal theories of perception, reference, action and knowledge; functionalist theories of the mind; consequentialism; and so on, and on. If we refused to use causal talk in philosophy, we would not even be able to formulate many of the theories that have shaped analytic philosophy over the last few decades. Overall – contrary to Russell – I think it's fair to say that the concept of causation does more good than harm.

What the traditional empiricist needs, then, is not an avoidance strategy but an analysis. What she needs to do, in other words, is to show that in using the term 'causation' we are not claiming to be referring to some mysterious, ineffable, empirically unrespectable feature of

the world at all, but to something that passes the empiricist credibility test (whatever that might be).

And so we come to what might be broadly characterised as ‘regularity’ theories of causation. Regularity theorists take it to be a brute, primitive fact about the universe that it is pervaded by regularities, and, from this rather unpromising starting point, they seek to define causation in a way that meshes tolerably well with our common-sense intuitions about what causes what. The purpose of regularity theories is to give an ontologically inoffensive account of what causation is: an account that does not appeal to anything mysterious or ineffable. In particular, regularity theories do not require there to be anything that might broadly come under the heading of ‘natural necessity’, or irreducible powers or dispositions, in order for our everyday (and philosophical) causal claims to be true.

The term ‘regularity theory’ encompasses a broad church. Hume started it (or at least, he did according to the traditional interpretation of Hume): for Hume-as-traditionally-interpreted, one event *A* could truly be said to cause another event *B* if *A* is contiguous with and temporally prior to *B*, and events similar to *A* are ‘constantly conjoined’ with events similar to *B*. My flicking the switch caused the light to go on just in virtue of the fact that the flicking happened just before the light went on, together with the fact that switch-flickings (of a certain kind) are invariably followed by lights going on.

Regularity theories in this narrow sense have long been out of favour for the simple reason that they are hopelessly extensionally inadequate. In the last 25 years or so, the single most popular kind of analysis has been counterfactual. Counterfactual theories of causation trace back to David Lewis’s ‘Causation’. Lewis starts by quoting Hume:

Hume defined causation twice over. He wrote “we may define a cause to be *an object followed by another, and where all the objects, similar to the first, are followed by objects similar to the second*. Or, in other words, *where, if the first object had not been, the second never had existed.*” (Lewis 1986a, 159; Hume 1975, 76)

Lewis despairs of regularity theories that broadly follow the first definition, and offers instead a counterfactual analysis, in line with the second definition.¹ But the Humean spirit of Lewis's analysis cuts a lot deeper than the mere fact that Hume happened to suggest the idea that causation might be understood in counterfactual terms, for Lewis marries his counterfactual analysis of causation with analyses of counterfactuals themselves, and laws of nature, which together make causation depend, at bottom, on regularities. So the counterfactual analysis of causation should be seen simply as a more sophisticated version of the original regularity theory Lewis was (successfully) attempting to displace.

Why is Lewis's analysis of causation really a regularity theory? Well, for Lewis, causal dependence is grounded in *counterfactual* dependence: *e* causally depends on *c* if and only if *e* counterfactually depends on *c*, which is to say, if and only if, had *c* not occurred, *e* would not have occurred. What makes this counterfactual true is that *e* does not occur at the *closest possible world(s)* at which *c* does not occur. Closeness of worlds is determined by similarity. If we want to know which out of world *A* and world *B* is closest to world *C*, the answer is: whichever of *A* and *B* is most similar to *C*. And similarity in turn depends on two basic features: the 'matters of particular fact' and the laws of nature. So world 1 is similar to world 2 to the extent that, first, what happens at world 1 is exactly the same as what happens at world 2; and, second, world 1's laws are the same as world 2's laws (Lewis 1979).

The final piece of the jigsaw is Lewis's regularity theory of laws of nature. Lewis has a 'best-system' analysis of lawhood (sometimes known as the 'Ramsey-Lewis view'): the laws of nature are those regularities that 'buy into those systems of truths that achieve an unexcelled combination of simplicity and strength', where the candidate regularities 'seem to supervene safely on the arrangement of qualities' (1986, xi).

The point here is that there is no natural necessity (or indeed any other kind of necessity) anywhere in Lewis's account of how the actual world is, or how any of its close neighbours

¹ 'First definition' and 'second definition' here refer to what comes before and after the 'Or, in other words' in the quoted passage. They are not to be confused with what are traditionally referred to as Hume's 'first' and 'second' definitions (according to which the whole of the quoted passage constitutes the first definition, as it appears in the *Enquiry*).

are. His analysis of causation is an attempt to show how that basic ontological story is consistent with very many of our causal claims' being true.

In the thirty years or so since Lewis's original paper was published, there has been a large philosophical industry devoted to more and more baroque counterfactual theories of causation, criticisms of those theories, and further refinements designed to overcome those criticisms. While there have been other themes in the literature concerning counterfactual analyses of causation, this, I think, has been the dominant one. What has been interesting about the dominance of this particular theme is that it is concerned more or less exclusively with the issue of whether any particular counterfactual analysis of causation is extensionally adequate. Of course, this is an important issue: if one has a conception of the fundamental nature of the universe according to which there is no natural necessity – no ultimate power or force or bringing-about that is somehow inherent in the nature of objects – then one really ought to show how that conception is consistent with the existence of causation. And one does that by providing an analysis. However, there is a more fundamental issue to be addressed, and that is the issue of whether the fundamental metaphysical purpose that any regularity theory serves is a viable one in the first place.

What I want to ask in this paper, then, is whether or not there are any good reasons to believe that Lewis's fundamental project – the repudiation of natural necessity – is hopeless. The claim that regularity theories *are* just hopeless is one that has been pressed by Galen Strawson. To my knowledge, his objections have not provoked much by way of a response from regularity theorists; and my task in this paper is to provide such a response.

Strawson's central claim about regularity theories is simply that the repudiation of natural necessity is not a serious philosophical option. According to Strawson, such a repudiation is in serious tension with our understanding of the universe as something whose orderliness is not a 'fluke', and is incompatible with our conception of objects as enduring things that possess real causal powers; and no ontological story that rides roughshod over so much of what we ordinarily take ourselves to know deserves to be taken seriously.

Lewis himself is a classic example of a regularity theorist who does not (so far as I know) even consider the kind of fundamental objection that Strawson presses. Lewis claims to be defending an extraordinarily austere fundamental ontology, so far as the actual world is concerned: according to him, the entire nature of the universe supervenes on the arrangement of spatio-temporal relations, point-sized bits of matter, and qualities of those point-sized bits of matter (1986, x). (And even ‘qualities’ here is to be understood in class-nominalist terms.) This is Lewis’s thesis of ‘Humean supervenience’, summed up in the slogan, ‘all there is to the world is a vast mosaic of local matters of particular fact, just one little thing and then another (1986, ix). Yet he is, or claims to be, sensitive to our ordinary intuitions (he calls himself a ‘commonsensical fellow’ (1986, xi)): his theories, of the mind, of laws, of causation and so on are supposed to do justice to what we ordinarily take to be the nature of these things. But this dual commitment – to an austere ontology on the one hand and to common sense intuitions on the other – is a highly unstable one. With that kind of ontology, there’s going to have to come a point where one’s conception of the nature of the universe pulls apart from the common-sense conception. Strawson’s central claim can be seen as the claim that, in the case of causation, the gap between the two is too extreme to be taken seriously. I shall argue that while Strawson may be right to claim that the gap between the regularity theorist’s and common sense’s conceptions of the nature of the universe exists, it is a gap we can learn to live with.

2. Causation with a capital ‘C’

I shall introduce Strawson’s objections to regularity theories by briefly sketching his interpretation of Hume. On the standard, traditional interpretation, Hume believed that all there was to ‘causation in the objects’ was regularity. There is, to be sure, more to our *concept* of causation than that; it really is part of our concept of causation that causes necessitate their effects. But when Hume traced the origins in experience of our concept of necessary connection, he found nothing *in the world* for that concept to latch on to, and concluded that necessary connection was no more than a ‘determination to carry our thoughts from one object to another’ (1978, 165): the impression of the cause produces a transition in the mind to the belief that the effect will follow, and the impression from which the idea of necessary

connection derives is an impression arising from that transition. We thus have no idea – no ‘positively contentful conception’, as Strawson puts it – of any connection ‘in the objects’, since the idea of necessary connection does not come from any impression *of* such a connection.

Strawson distinguishes between causation (small ‘C’) and Causation (capital ‘C’), the latter being the thing whose existence Hume-as-traditionally-interpreted denies: Strawson uses the term ‘Causation’ to function as ‘a completely general term that can be substituted for any of the other terms (‘power’, energy’, etc.) that Hume uses as terms that purport to refer to causation conceived of in some essentially non-Regularity-Theory way’ (1989, 84). For Strawson, Causation is that feature of ‘the fundamental nature of the world in virtue of which the world is regular in its behaviour’ (*ibid.*).

On Strawson’s interpretation, Hume never really denied the *existence* of Causation; he was just sceptical about any claims to know its true nature. According to Strawson’s Hume, all we can ever *know about* Causation is that it gives rise to regularities; its *nature* is hidden from us (again, because we can form no positively contentful conception of it). But the *existence* of Causation is not in question. Hume allowed that we have a ‘relative’ idea of Causation – the idea of a something-we-know-not-what whose existence guarantees the orderliness of nature – and held that it is that thing – Causation – that we are really referring to in our ordinary causal talk.

The analogy Strawson draws here is with natural kind terms like ‘water’ and ‘gold’. The nominal essence of water, by which we identify samples of water *as* water (wet, colourless, tasteless, etc.) does not determine the reference of ‘water’: something (XYZ, for example) could have water’s nominal essence and yet fail to *be* water (in which case, of course, we would ordinarily misidentify it as water). What determines the reference of ‘water’ is water’s *real* essence – whatever that may be. (Of course, we think the real essence is its chemical composition – H₂O. But ‘water’ would still refer to the stuff it actually refers to even if we turned out to be wrong about water’s chemical composition – or if we had no view at all about what its real essence might be.) The legitimate use of the term ‘water’ thus does not depend

on our having a positively contentful conception of its real essence; all we need is such a conception of its nominal essence.

Hume's view of causation, according to Strawson, is analogous. Causation (capital 'C') is whatever it is in the world that underlies or generates the regularities. While we have no positively contentful conception of Causation, we *do* have a positively contentful conception of what it gives rise to, namely regularities. Regularities form the evidential basis for causal claims (just as water's nominal essence forms the evidential basis on which we ordinarily make water claims), but those causal claims themselves are *about* Causation – they are *about* whatever holds the universe together.

It is important to be clear on what, exactly, Causation is – or rather, what it is supposed to do – on Strawson's (and Strawson's Hume's) view. Simon Blackburn distinguishes between the desire for what he calls a 'causal nexus' and the desire for a 'straitjacket on the possible course of nature'. A causal nexus would be 'a further fact than (mere) regular succession [between two particular events] ... a dependency or connection, a fact making it so that when the first happens the second *must* happen' (2000, 103). A causal nexus would thus be a *singular* relation between events, whose obtaining would not conceptually or metaphysically guarantee that other events of the same kinds will be similarly related. A 'straitjacket' does more than this:

... suppose we shift our gaze to the whole ongoing course of nature. Again, we may want there to be a further fact than mere regular succession. We feel that the ongoing pattern would be too much of a coincidence unless there is something *in virtue of which* the world has had and is going to go on having the order that it does. We want there to be some secret spring or principle, some ultimate cause, 'on which the regular course and succession of objects totally depends' (Hume 1975, 55). This is whatever it is that ensures the continuation of the natural order, that dispels the inductive vertigo that arises when we think how events might fall apart. (2000, 103)

Strawson's Causation is (as will become clear later) a 'straitjacket on the possible course of nature'; and it is this, he claims, that Hume believed in, and he believed that we refer to it in our causal talk.

As I said in section 1, regularity theories take as their starting point the thought that we should not take our causal talk to be talk about something ineffable or mysterious or too far removed from our experiential reach. We can now see why Strawson's Hume is not a regularity theorist: for him, causation (that is, Causation) is indeed ineffable – we can have no positively contentful conception of it – but causal talk is, nonetheless, talk *about* it, and not about regularities.

Strawson's central charge against regularity theories is that they are (not to put too fine a point on it) 'absurd':

It may seem extraordinary that anyone should ever have held the view that there is definitely no 'because' in nature; that there is definitely nothing about the world in virtue of which it is regular. It is ... certainly one of the most baroque metaphysical suggestions ever put forward (principally by people who pride themselves on dispensing with metaphysical extravagance). (1989, 86-7)

According to [regularity theories] ..., the regularity of the world's behaviour is, in a clear sense, a complete and continuous fluke. It's not just that we don't know whether or not there is any reason for it in the nature of things. According to [regularity theories], there is definitely no reason for it in the nature of things. (1989, 21)

The objection to [regularity theories] ... is that the theory is utterly implausible in asserting categorically that there is no reason in the nature of things for the regularity of the world ... it is absurd to say – to insist – that there is definitely no reason in the nature of things why regularity rather than chaos ... occurs from moment to moment. Such a view is typical dogmatically anti-realist overshoot: a strict empiricist

epistemological claim about what we can observe flowers into a vast and spectacular metaphysical claim about the nature of things. (1989, 21-22)

Strawson's claim, then, is that (1) regularity theories deny that there is any reason for the regularity of the world, and that (2) this is absurd. In the rest of this section I shall examine (1). I shall argue that regularity theories do not *entail* that there is no reason for the regularity of the world, but that the (contingent) denial of the existence of such a reason is something that regularity theorists ought to be committed to anyway. I turn to (2) in sections 3 and 4, where I discuss various versions of the absurdity charge and argue that none of them is convincing.

In what sense do regularity theories deny that there is a reason for the regularity of the world? Well, regularity theories embody a supervenience claim about causation, namely that causal facts supervene on non-causal facts, or on what John Carroll calls a 'wholesome base' (see his 1994, Chapter 1, especially 3-12). Regularity theories put their faith in a fundamental ontology of 'distinct existences' (fact, events, qualities of space-time regions or whatever) – just one little thing and then another, as Lewis put it – and they claim, in various different ways, that causal facts supervene on that wholesome base.

Regularity theories of causation, traditionally conceived – and in particular Lewis's analysis – are committed not just to the contingent supervenience of the causal facts on the wholesome base, but to the *necessary* supervenience of the former on the latter. This might, in Lewis's case, seem surprising. Lewis's overall metaphysical project is, he claims, an attempt to show that the thesis of Humean supervenience, characterised earlier, is tenable. (See the introduction to his 1986, especially ix-xi.) (Humean supervenience is even more ontologically austere than wholesome-base supervenience, but I shall treat them as roughly equivalent here.) But he claims that if Humean supervenience is true, it is at best contingently true. He is quite happy with the idea that things like immaterial substances exist at other possible worlds; he just wants a philosophical theory according to which they don't exist in the *actual* world.

Given this overarching philosophical ambition, one might be tempted to suppose that Lewis thinks that the supervenience of causation and laws of nature on the wholesome base is similarly merely a contingent matter: there's non-supervenient causation at other possible worlds all right, but there just happens not to be any in the actual world. Which is to say, there are other possible worlds where causation does not supervene on mere regularity, but is something more ontologically basic: something that is a part of the fundamental fabric of the universe.

Now, perhaps this position – that causation and laws contingently supervene on the wholesome base – is a tenable philosophical position; and indeed, I think some philosophers hold it. But I do not think it is one that Lewis himself, or any standard regularity theorist, could plausibly be said to hold. The reason is that what Lewis offers in both his counterfactual analysis of causation and his best-system analysis of lawhood – and what regularity theorists in general traditionally offer – is a piece of straightforward, traditional conceptual analysis. The counterfactual analysis of causation and the best-system analysis of lawhood together provide necessary and sufficient conditions for the obtaining of causal relations – not just at the actual world, but across all possible worlds. And those necessary and sufficient conditions concern nothing more ontologically basic than mere regularities.

It is – as I just said – open to someone to hold that causation *in fact* depends on no more than mere regularity, but that it does not so depend at all possible worlds. For example, one might hold that in fact, at the actual world, there is nothing holding the universe together, so that causation *here* is just regularity, but that at other possible worlds something *does* hold the universe together, and that, at those worlds, *that* is causation. (In other words, one might hold that causation is regularity at the actual world, but that causation is Causation at worlds where Causation exists.) I shall not explore that possibility in this paper; instead I shall take it for granted that regularity theorists are committed to the necessary supervenience of the causal facts on the wholesome base.

Does it follow that regularity theories, so conceived, entail that there is 'definitely' or 'categorically' no reason for the world's regularity? Well, it depends what one means by

‘definitely’ or ‘categorically’. If one means ‘necessarily’, then the answer is no. Regularity theories entail only that, at any possible world, if there *is* anything that is the reason for the universe’s regularity, then that thing is not causation. In any possible world, the causal facts (if there are any) are determined in a way that is completely independent of the presence, or not, of anything that might lie behind or underwrite those regularities; the presence or absence of such features, whatever they are, thus has nothing to do with what *causal* facts there are.

On Strawson’s view, of course, Causation is just *defined* as whatever it is (if it exists) that underwrites the regularities. So, for Strawson, a reason for the world’s regularity would by definition be Causation and hence obviously *would* merit being called ‘causation’. One might therefore be tempted to describe the regularity theorist’s position thus: ‘the existence or not of Causation has nothing to do with what the causal facts are’. And that does sound like a very peculiar claim to make. But of course the regularity theorist will object to having her view characterised in this way, since she will object to the assumption that whatever (if anything) holds the universe together merits the name ‘Causation’. The slogan ‘Causation (capital ‘C’), if it exists, is causation’ sounds like an analytic truth – but it is not, for the slogan takes it for granted that ‘Causation’ is an appropriate name for that which holds the universe together – and that is something that the regularity theorist will deny. After all, by what right do we call whatever it is that holds the universe together ‘Causation’, when we can have no positively contentful conception of what that thing is like?

2.1 Does the ordinary concept of causation reach beyond regularity?

So far we do not have a ‘vast and spectacular metaphysical claim about the nature of things’ at all. Instead, we have a claim about the meaning of the term ‘causation’ – a claim to the effect that the term does not (contrary to what Strawson’s Hume held) reach out referentially to whatever holds the universe together (if such a thing exists). Strawson has two possible lines of attack on this semantic claim. One is straightforwardly to insist (as in fact he does) that the ordinary, common-sense concept of causation does in fact reach out beyond mere regularities; hence the regularity theorist simply gets the concept of causation wrong. The other is to justify the analogy with natural kind terms. I shall take each objection in turn.

Strawson certainly does take it that the ordinary concept of causation reaches out beyond regularities. Criticising a simplistic regularity view, according to which ‘to say that ... event *A* caused another ... event *B* is simply to say that *B* succeeded *A* ... and that events of type *A* are regularly ... succeeded by (contiguous) events of type *B*’ (1987, 254), Strawson says:

Such a Regularity theory of causation – one could loosely express it as the view that there is no ‘because’ in nature – stands in strong contrast with our ordinary view. And I take it that it is our (science-enriched) ordinary view of causation that provides the basis at least for the main philosophical rival to the Regularity view, which I shall call the ‘Producing Causation’ view ... (*ibid.*)

According to the ‘Producing Causation’ view, Strawson says, ‘to say that one ... event *A* caused another ... event *B* is simply to say that *A* (i) produced or gave rise to or brought about and (ii) necessitated the occurrence of *B*: each object has a certain intrinsic nature or constitution, and it is in virtue of objects having the intrinsic natures or constitutions that they do have that they act and react, and cannot but act and react, in the regular ways in which they do’ (1987, 255). He then claims that the regularity theorist must deny that causes ‘produce’ or ‘give rise to’ their effects – at least in the ordinary senses of these terms (see his 1987, 256). Thus – given that the ordinary concept of causation is the Producing Causation view, and given that the regularity theorist cannot (without reinterpreting the relevant terms) endorse the Producing Causation view, regularity theories are at odds with the ordinary concept of causation.

Given that Strawson’s concern here is with a very simplistic kind of regularity theory, his point is well made: I think the regularity theorist ought to accept that there *is* a conceptual gap between being an instantiation of a regularity on the one hand and the relation of production or giving-rise-to on the other. However, the issue is much less clear-cut once we abandon the simplistic regularity theory and consider a counterfactual analysis. As I have argued, Lewis’s counterfactual analysis of causation is a sophisticated regularity theory; and, arguably, that analysis does not fall foul of the conceptual gap objection. For Lewis, causation is a matter of

counterfactual dependence; and it is far from clear that the notion of *B*'s counterfactually depending on *A* is not sufficiently close to the ordinary notion of producing or giving-rise-to.

Strawson might reply that, given Lewis's natural-necessity-shunning account of what it is for *B* to counterfactually depend on *A*, the notion of counterfactual dependence itself turns out to be too deflationary to capture fully the ordinary concept of production or giving-rise-to.

Clearly, however, such a response requires some positive argument in its favour.

In any case, a problem for Strawson remains, since it is undeniable that at least *some* ordinary causal claims do not purport to refer to any underlying relation, namely causal claims about absences. If a lifeguard wilfully fails to rescue a drowning swimmer, we would ordinarily count that failure as a cause of the drowning. (The drowned swimmer's family might successfully sue for negligence, and their success in court would depend in part on the prosecution arguing that the failure was a cause of the drowning.) But in cases of causation by absence, there is no sense in which some sort of natural necessity could be thought to enter into the picture. There can be no *relation* of making-happen or producing or bringing-about in such cases; there is no 'action' of one object on another. And this suggests that the common-sense concept of causation is *not* one that enshrines an automatic commitment to anything like natural necessity, or to that-in-virtue-of-which-the-universe-is-regular.²

Suppose, however, that we were to grant Strawson's claim that regularity theories do not fully endorse our common-sense intuitions about the nature of causation (and ignore the fact that the Producing Causation view does not do so either). Does it follow that regularity theories must be abandoned? Only if one holds that alignment with the ordinary concept is required of a philosophical analysis – either in general or in the particular case of causation. But such a claim is extremely implausible. Arguably most philosophical progress involves a degree of conceptual revision; if conceptual revision were off the agenda, it would be illegitimate to deny that the mind is an immaterial substance (or indeed an object of any sort), for example,

² I myself believe that it is possible to reinterpret our ordinary causal claims about absences in such a way as to restore the thought that causation is a genuine relation (see Beebe (forthcoming)). However, in the current context, such a move is not open to Strawson, since Strawson is here claiming that our ordinary causal talk does, in fact – without reinterpretation – latch on to a genuine regularity-guaranteeing relation.

or to deny that colours are intrinsic properties of objects, or to deny that causation must be deterministic. In each case, of course, one might argue that the abandoned intuitions were never *really* part of the ordinary concept – of mind, or colour, or causation – in the first place. One might argue instead that the view that the mind is a substance, or that colour is an intrinsic property, or that causation is deterministic, was merely a belief *about* the phenomenon in question that turned out (by most philosophers' lights) to be false, rather than a requirement on what it *is* to be a mind, or coloured, or causally related. But then the same can be argued in the case of the belief that causation is the underlying reason for the universe's regularity.

If the claim that causation depends at bottom on no more than regularity really is in tension with the ordinary concept of causation (a claim that I raised doubts about above), then even so, we should not take that fact to fatally undermine regularity theories. That a philosophical theory leave our ordinary beliefs exactly as they were is not a necessary condition on that theory's adequacy.

2.2 The 'real essence' of causation

I claimed above that Strawson has two possible lines of attack against the regularity theorist's claim that 'causes' does not reach out referentially to whatever holds the universe together. I have now dealt with the first line of attack. The second line of attack was for Strawson to attempt to justify the claim that a real/nominal essence distinction can be made in the case of 'causes'.

The idea here would be something like this. The general motivation for regularity theories, as we saw in section 1, is the thought that we should not appeal to any ineffable we-know-not-whats in our philosophical theories. (This is not to say that we should deny that there *are* any ineffable we-know-not-whats; it is only to say that we should not appeal to them in any attempt to provide a positive theory about a particular phenomenon.) But – so the line of attack goes – a case can be made for the claim that our causal talk *refers* to Causation, even granted the fact that we do not possess a 'positively contentful' *concept* of Causation.

Strawson motivates this claim by appealing to an analogy with the standard (though not obligatory) way of thinking about natural kind terms: the reference of the term ‘water’ goes along with the real essence of water (i.e. its chemical composition), even if we are completely ignorant about what that real essence is – that is, we need not have a ‘positively contentful concept’ of what that real essence is like. I shall argue that there is in fact no case to be made, via the analogy with natural kind terms, for the claim that our causal talk refers to anything like a ‘real essence’ of causation, since the analogy breaks down at a crucial point.

According to the view that Strawson is presupposing, natural kind terms are semantically distinctive in that the reference of natural kind terms like ‘water’ – unlike non-natural kind terms like ‘chair’ – necessarily goes along with the real essence of the kind, rather than its nominal essence. (Or, to put it another way, members of a natural kind share a real essence whereas members of non-natural kinds do not.) The standard argument for the claim that a given term behaves semantically in this way proceeds by employing Twin-Earth-type thought experiments that are designed to reveal our semantic intuitions. In the case of ‘water’, for example, we are asked to imagine that the watery stuff on Twin Earth – that is, the Twin-Earth stuff that has exactly the same nominal essence as actual water – has the chemical formula XYZ rather than H₂O. And we are supposed to judge that the Twin-Earth watery stuff is not *water*.

The claim that ‘causation’ behaves semantically like a natural kind term thus amounts to the claim that, like water, causation has a real essence whose nature determines the reference of ‘causation’ across all possible worlds. But, as Strawson admits, causation does *not* have a real essence in *that* sense:

... ‘causation’ is not a true natural-kind word. It is more like the word ‘temperature’ than the word ‘gold’: for causation could conceivably have different ‘realizations’ in different possible universes which had different basic natures, so that there were different reasons why the different universes were regular in the ways that they were (1989, 126).

This restriction of the ‘real essence’ of causation to the actual world makes it very hard to see how one might provide a positive argument based on semantic intuitions for the claim that the reference of ‘causation’ is determined by causation’s real, rather than nominal, essence. For it now turns out that, across worlds where *something* lies behind the regularities, the reference of ‘causation’ (unlike natural kind terms) goes along with nominal rather than real essence. The only possible test case, then, is going to be a possible world where we have nominal essence – regularity – but no real essence at all: no reason for the regularity. Strawson would claim, of course, that there is no causation at such a world – thus providing the required case of reference (or lack of it in this case) going along with real rather than nominal essence. But what we now need is an independent argument to the effect that a world where there is mere regularity is indeed a world where there is no causation. And, as I have already argued, that case has not been persuasively made.

2.3 The contingent denial that something holds the universe together

So far I have argued that the traditional regularity theorist need not be committed to the claim that there *could not* be anything holding the universe together. She is required only to think that if there *is* any such thing – at this or any other possible world – then it is not causation. And I have argued that that claim is not at all absurd.

Still, a traditional regularity theorist ought, I think, to hold a stronger position than just what is required by the terms of the theory: she ought to hold further that there is, in fact, no reason for the world’s regularity. The whole point of regularity theories, after all, is to provide an analysis of causation that does not appeal to natural necessity; and it is hard to see what the point of doing so would be if one believed in natural necessity anyway. The point of providing a regularity theory of causation is, precisely, to put flesh on the claim that we can do without believing in natural necessity.

This is not, of course, to say that the regularity theorist is committed to the view that only those things of which we can form a positively contentful conception exist. She can happily accept that there may very well be much more to the universe than we are capable of

conceiving. She can even concede that one such entity might, conceivably, be something that holds it all together. She can grant the intelligibility of that supposition even though she cannot form and positive conception of what such a thing could be like. She simply sees no positive reason to suppose that such a thing *does* exist, since she holds that no such entity is required to ground causal facts.

3. Is there a reason why the universe is regular?

The traditional regularity theorist, I have argued, ought to hold that there is, in fact, no reason why the universe is regular. Strawson has three objections to this view. His first objection against this view is that ‘it is absurd, given the regularity of the world, to say – to insist – that there is definitely no reason in the nature of things why regularity rather than chaos ... occurs from moment to moment’ (1989, 21-22). I address that objection below, and the others in section 4.

I take it that ‘reason’ in ‘it is absurd ... to say ... that there is definitely no reason ...’ is supposed to signify that objective feature of the world which underlies any (true) *explanation* for the world’s regularity. The distinction between ‘reason’ and ‘explanation’ is important, I think, for the following reason. Suppose we agree with Strawson’s Hume that we can have no positively contentful conception of what it is that holds the universe together. Then we cannot *explain* why the universe is regular, since we cannot in principle provide any positive characterisation of the purported explanans. The most we can do is claim that *there is something* holding it all together – and that does not look like much of an explanation of *why* the universe is regular. Nor can we (on one understanding of what an ‘explanation’ must be) thereby claim that there is, objectively, an explanation of why the universe is regular: if we hold that explanation is something that *we do*, then we cannot claim on the one hand that an explanation exists, while on the other hand claiming that no explanation is in principle graspable by us. Hence the need to talk about a *reason* why the universe is regular: the *reason*

might exist even if we are incapable of grasping its nature and hence of having it feature in an *explanation* of why the universe is regular.³

The regularity theorist agrees with Strawson's Hume that we cannot have any positively contentful concept of anything that might count as a reason why the universe is regular. And she holds further that given this lack of a positively contentful conception, there is no possibility of our being able to come up with an explanation (in the above sense) for the regularity of the universe. But granted that no such explanation is possible, it is unclear how holding on to the belief that there is, nonetheless, a 'reason' why the universe is regular puts us in any better a philosophical position than does denying that there is any such reason. By hypothesis, no such 'reason' can play any part in our explanatory practices. (And our ordinary explanatory practices are not in the least affected by this. We can still explain particular phenomena by saying something about their causal history, for example.)

Compare the belief in something-holding-the-universe-together with a penchant for conspiracy theories. Concrete conspiracy theories are, of course, available for some historical events – the shooting of JFK, for example. Some conspiracy theorists hold – not unreasonably – that there are many other historical events whose causes were not as claimed by politicians, lawyers, the media, or whoever, even though we might never in fact get to the bottom of precisely which malign forces were at work in a given case or how they worked. One might coherently believe, for example, that Robert Maxwell's fall from his yacht was no accident, without having the slightest idea how or why his unknown murderer managed to push him overboard. And of course she might coherently believe that she will never find these things out: the witnesses may have been bumped off, MI5's files destroyed, and so on, so that the true circumstances will never come to light.

³ This distinction between reason and explanation is implicit in Strawson's claim – concerning the existence of the universe rather than the existence of regularities – that '[e]ven if it is true that ultimately there is not only no humanly attainable *explanation* of the existence of the universe, but also no *reason* for the existence of the universe, it just does not follow that everything that happens is ultimately a matter of chance' (1991, 212).

The believer in something-holding-the-universe together is in a worse position than our forever-ignorant conspiracy theorist, because there is no possibility, even in principle, of the reason for the universe's regularity ever 'coming to light' – no possibility of the reason becoming an explanation. She is thus more like a believer in, say, fate or destiny. The believer in destiny typically holds that significant but in fact inexplicable events – chance encounters on tube trains or whatever – are somehow explained by the hypothesis that the events in question were 'destined to happen'. Such a believer has a strong explanatory urge, and believes that that urge can be satisfied by appeal to destiny. It cannot: the claim that the event was 'destined to happen' amounts to no more than the claim that, somehow or other, it was no accident. But that is not an explanation for why it happened. In fact, there *is* no explanation for the event in question (or at least not an explanation of the kind that our believer in destiny wants).

The urge to explain the universe's regularity is, I think, analogous. The urge exists all right, but there is no *a priori* reason to suppose that it is an urge that can be satisfied. Worse: given the lack of a positively contentful conception of anything holding the universe together, there is (according to the regularity theorist) every reason to suppose that the explanatory urge *cannot* be satisfied. The best one can have is an unspecific belief in a 'reason' – and such a belief does not, in itself, count as the satisfaction of the explanatory urge.

This may not seem like a very convincing response to Strawson's objection. If one *demand*s of an adequate ontology that it postulate something-in-virtue-of-which-the-universe-is-regular, then a regularity theory of causation, and the concomitant (but contingent) repudiation of any such entity, cannot satisfy. The regularity theorist's response is not to attempt to satisfy the demand, but to question whether it is a demand that really needs or deserves to be satisfied. I claim that we can learn to live with what Blackburn calls inductive vertigo (see section 2 above) and hence that the demand in question need not be met: the ontological cost of meeting it is not a price worth paying.

So far I have concentrated on an alleged explanatory problem for the regularity theorist. But – as the phrase 'inductive vertigo' suggests – one might also think that there is a related

epistemic problem. If the regularity of the universe is, at bottom, a 'fluke', then isn't the continued orderliness of nature extremely surprising? Consider an analogy of Strawson's:

[Imagine that] a true randomizing device determines the colour value of each pixel on a standard 800 x 400 computer screen, running on a ten-times-a-second cycle – so that each pixel can take any colour value for each 1/10th second period. On the screen it appears that there is a film showing. A woman enters a house, walks over to a stove, and puts on a kettle. Life – a world, as it were – goes on in an ordered, regular fashion, exactly as regularly as in our own world.

But the image is being generated by the true randomizing device. It is pure fluke that what happens on the screen appears to tell a coherent story of a regular, ordered world, rather than filling up with – or suddenly switching to – a fizz of points of colour. (1989, 24)

Strawson's point, of course, is that if there really is nothing in virtue of which the universe is regular, then the fundamental nature of the universe is analogous to the story being played out on the computer screen: it's just a continuous fluke that things go on in the orderly way that they do.

The regularity theorist must, I think, accept that from a metaphysical point of view the analogy is a pertinent one: she must admit that, in a sense, the continued orderliness of nature is what Strawson calls an 'outrageous run of luck' (1989, 26). The question is whether this is a consequence of regularity theories that can be tolerated. I myself think that it can be tolerated. After all, we have mostly learned to tolerate other outrageous runs of luck. Consider, for example, how spectacularly lucky you are to exist at all. It's extraordinary enough that conditions on Earth have for a long time been, and continue to be, compatible with any life at all; the margins for error (climatic conditions, composition of the atmosphere and so on) are very narrow. But that's not the half of it. Consider how many events had to happen in order for you to be conceived, and how many occasions there must have been on which either one of your future parents might unwittingly have said or done something that

would have put your future existence in jeopardy. Then go back a generation to both sets of grandparents, and so on, and on. When you think about it, your own existence is an extraordinary fluke. How much does this bother you? Most likely, not at all. You therefore probably have absolutely no inclination to suppose that there is some kind of underlying ‘reason’ why things throughout history panned out in such a way as to produce you.

On the other hand, if we found ourselves in the situation described above – watching the ‘film’ showing but knowing that it was randomly produced in the way Strawson describes – we *would*, quite reasonably, be very surprised. We might even start to suspect that someone has been tinkering with the computer program, and thereby doubt that the ‘film’ really was randomly generated. The question, then, is whether the inexplicable regularity of the universe is more like the second case than the first. One reason to think not is that there is a relevant epistemological difference between the regularity displayed by the universe and that displayed on the computer screen. Given what we take ourselves to know about how the computer operates, we cannot possibly make any *predictions* about what will happen on the screen. (Or rather, our best prediction will be that there will be some sort of jumbled mess appearing – though of course we cannot say which out of the billions of possible jumbled messes will appear.) Relative to what we take ourselves to know, it is extraordinarily surprising that the image that in fact appears is the way Strawson describes.

In the case of the world, by contrast, we take ourselves to know (fallibly, of course) that the universe is, in fact, an incredibly ordered place. If we did not take ourselves to know this, or at least did not believe it with a reasonable degree of confidence, we would not be able to do anything at all, and we would all be dead by now. And given that we take ourselves to know that about the world, it is entirely *unsurprising* that things turn out the way they do.

4. Strawson’s incoherence objections

I turn, finally, to two objections that Strawson raises in his 1987. Both objections allege that regularity theories are ‘absurd’ not simply in the sense that they are counter-intuitive, but in the sense that they are genuinely internally incoherent. In each case, the alleged incoherence

arises from an incompatibility between, on the one hand, the kind of realism about objects (or realism about the external world generally) that regularity theorists typically presuppose, and, on the other, anti-realism about the existence of a reason for the regularity of those objects' behaviour. (For simplicity – following Strawson – I shall refer to the former realism as 'Realism' with a capital 'R'.)

Strawson's first objection is that regularity theories are incompatible with our 'taking proper account of the *temporality* of matter' (1987, 260). He says:

Matter, as ordinarily conceived, is essentially something that persists through time. And it is ordinarily supposed to possess certain unchanging fundamental properties as it persists through time; it is, in other words, supposed to have a certain persisting, intrinsic, stable *nature*, as it persists through time. But to postulate such non-coincidentally stable, continuant, propertied matter, as all ordinary Realists ordinarily do, is (in effect) already to have postulated the existence of forces whose existence is part of the mode of existence of matter and its properties. For what (as it were) holds matter together, as something with a (constant) nature, from instant to instant? What maintains it as something that remains qualitatively similar from instant to instant?

The answer cannot be 'Nothing at all'. For then the transtemporal qualitative similarity or stability is after all entirely coincidental, and matter cannot after all be said to possess a (more or less stable), persisting intrinsic *nature*. So the answer must be, 'Something'. And the present suggestion is that the phrase 'objective forces' is as good a name as any for whatever that something is. (1987, 260-1)

Strawson is here trading on an ambiguity in the word 'forces'. It is uncontroversial that forces hold 'matter together ... from instant to instant' where 'forces' are understood as the kinds of thing we learn about from scientists. That I maintain my bodily integrity from one moment to the next – rather than all the atoms that make up my body dispersing throughout the room – is due to the operation of forces. But acceptance of this does not compel one to accept that those forces also 'hold matter together' in any ultimate, non-regularity-theory way. For (according

to the regularity theorist) the continued existence and stability of those forces is itself just one more brute regularity.

Thus, for the regularity theorist, forces do indeed maintain matter as something that ‘remains qualitatively similar from instant to instant’; nonetheless, the regularity theorist will maintain that there is a sense in which ‘the transtemporal qualitative similarity or stability is after all entirely coincidental’. But why is it supposed to follow that matter cannot after all be said to possess ‘a (more or less) stable, persisting *nature*’? Strawson here effectively presupposes that something’s having a ‘stable nature’ requires not simply that it *in fact* remain unchanged from moment to moment, but that it is *guaranteed* to do so. But this claim can simply be denied: the regularity theorist can simply insist that something whose unchangingness is, from moment to moment, ultimately contingent – not guaranteed by any ‘straitjacketing fact’ – deserves, just by dint of its unchangingness, to count as having a ‘stable nature’. So there is no tension between regularity theories and our ordinary conception of matter as having a ‘stable nature’.

There is, admittedly, a serious worry for the regularity theorist lurking here, which is that forces do not seem to be the kind of ‘distinct existences’ upon which causal facts are supposed to supervene. What it *is* for there to be, say, a magnetic force between two objects seems not to be entirely distinct from how those objects are interacting with each other. The regularity theorist needs to meet this objection. But that (thankfully) is not my concern here. Recall Blackburn’s distinction between a causal nexus and a straitjacket. To admit that forces are not fully distinct from (but are not reducible to) the behaviour of objects subject to them would be to admit the existence of (something like) a causal nexus. But one need not thereby admit the existence of a reason for the regularity of the universe; a causal nexus is something whose continued operation from one moment to the next is, as Blackburn puts it, ‘a case of coincidence or fluke, another contingency crying out for explanation and engendering inductive vertigo’ (2000, 103).

The point here is simply that the claim that forces ‘hold matter together’ is entirely consistent with there being nothing holding the universe together – there being no straitjacket. Whatever

account we give of the nature of forces, the fact that matter has a stable nature does not require us to postulate straitjacketing ‘objective forces’ in Strawson’s sense of the term. The stable nature of matter gives us no reason to suppose that there is a reason why the universe is regular.

The second objection Strawson raises that is supposed to reveal an inconsistency between Realism on the one hand and regularity theories on the other concerns the parallel nature of the evidence that supports Realism on the one hand, and the evidence that supports the existence of ‘objective forces’ (understood in Strawson’s straitjacketing way) on the other. Strawson says:

In fact, experience of regularity of succession is evidence for the existence of objective forces in rather the same way as experience as a whole is evidence for the existence of an external world of objects. It is, perhaps, not conclusive evidence. But anyone who says that to posit the existence of objective forces is a vacuous step may well have to grant that to posit the existence of an external world is an equally vacuous step. But it is not a vacuous step. The claim that there is an external world (of tables and chairs, etc.) is a substantive claim ... And the claim that there are objective forces is arguably in the same case ... [Realist regularity theorists] cannot say that espousing a regularity theory of causation is just good empiricist epistemological hygiene – not going beyond the evidence, or ‘meaning-empiricism’, or some such thing. For in this sense of ‘going beyond the evidence’ it is arguable that they have, in being realists about an external world of objects, already gone far beyond the (sensory) evidence. *A fortiori*, they have granted the possible legitimacy of moves of this sort.

It may not be provable that there are objective forces, then. But *if* Realism is true, and if there is an external world of objects of which we have experience, as is at present assumed to be the case, then it is (to put it mildly) overwhelmingly likely that there are. (1987, 264-5)

The reason why this is ‘overwhelmingly likely’ is the familiar one – if we do not postulate something holding the universe together, then the orderliness of nature would be a huge coincidence.

The idea, then, is that the existence of ‘objective forces’ stands to the regularities we observe in nature as the existence of the external world stands to what Strawson later calls the ‘constancy and coherence’ of our experience in general (1987, 269). In each case, something is posited for which we cannot have conclusive evidence; and that something serves to explain or underpin the phenomenon in question. Thus if one is (as the Realist regularity theorist is) a Realist about the external world, one should also be a realist (as the Realist regularity theorist is not) about objective forces.

Strawson’s argument hinges on the alleged parallel between belief in the external world and belief in objective forces. The right response to the objection, I think, is to deny that any such parallel exists. According to the (Realist) regularity theorist, we can have no ‘positively contentful’ conception of anything that might hold the universe together. As an explanatory hypothesis, the claim that there *is* such a thing is, as I argued in section 3 above, pretty useless: to claim that there is a reason why the universe is regular is not to *explain why* it is regular. Is anything like the same true of the claim that the external world exists? Certainly not. The kind of Realist Strawson is concerned with is not the kind who believes in unknowable things-in-themselves, whose existence is somehow required in order to explain why experience is possible but whose nature we cannot begin to conceive. Strawson’s Realist believes in an external world of chairs and tables – a world whose nature is (by and large) eminently conceivable, and indeed knowable. Moreover, we have at our disposal a huge body of knowledge (from physics, psychology, and so on) about how it is that that external world furnishes us with the experiences we find ourselves having. The existence of the external world is an explanatory hypothesis of extraordinary sophistication and detail. The belief in something-holding-everything-together, by contrast, is not.

5. Conclusion

Strawson's objections to regularity theories hinge on two central claims: first, that belief in something holding the universe together is rationally required of anyone who is a Realist about the external world; and, second, that that thing deserves the name 'causation'. I have argued that Strawson's arguments for these central claims are not compelling, and hence that he has failed to refute regularity theories of causation.

On the other hand, perhaps Strawson is right to hold that there is something counter-intuitive – perhaps deeply so – about regularity theories' repudiation of any entity that serves to bind the goings-on in the universe together. To the extent that this is so – *pace* Lewis – no regularity theory, not even an extensionally adequate counterfactual analysis of causation – will succeed in fully capturing the content of the ordinary concept of 'cause'. But that in itself does not make regularity theories metaphysically absurd. For the regularity theorist, inductive vertigo – that feeling one gets when one spends too long reflecting on the fact that everything may yet fall apart at any moment – is not an ailment to be cured by ontological inflation. If it is an ailment at all, it is better to suffer it than to accept the cure that Strawson offers us.

References

- Beebe, H.: forthcoming, 'Causing and Nothingness', in J. Collins, E.J. Hall and L.A. Paul, (eds), *Causes and Counterfactuals*, Boston, MIT Press.
- Blackburn, S.: 2000, 'Hume and Thick Connexions', in R. Read and K.A. Richman (eds), *The New Hume Debate*, London, Routledge, pp. 100-12
- Carroll, J.: 1994, *Laws of Nature*, Cambridge, Cambridge University Press.
- Earman, J.: 1986, *A Primer on Determinism*, Dordrecht, D. Reidel.
- Hume, D.: 1975, *Enquiries Concerning Human Understanding and Concerning the Principles of Morals*, 3rd edition L.A. Selby-Bigge and P.H. Nidditch (eds), Oxford, Clarendon Press.
- Hume, D.: 1978, *A Treatise of Human Nature*, 2nd edition L.A. Selby-Bigge and P.H. Nidditch (eds), Oxford, Clarendon Press.
- van Inwagen, P.: 1983, *An Essay on Free Will*, Oxford, Clarendon Press.
- Lewis, D.K.: 1979, 'Counterfactual Dependence and Time's Arrow', *Nous* **13**, 455-76.

- Lewis, D.K.: 1986, *Philosophical Papers Volume II*, New York, Oxford University Press.
- Lewis, D.K.: 1986a, 'Causation', in his 1986, 159-72.
- Russell, B.: 1913, 'On the Notion of Cause', *Proceedings of the Aristotelian Society* **13**, 1-26.
- Strawson, G.: 1987, 'Realism and Causation', *Philosophical Quarterly* **37**, 253-77.
- Strawson, G.: 1989, *The Secret Connexion: Causation, Realism, and David Hume*, Oxford, Clarendon Press.
- Strawson, G.: 1991, 'The Contingent Reality of Natural Necessity', *Analysis* **51**, 209-13.