BIRD AGAINST THE HUMEANS

Harold W. Noonan

Abstract

Debate between Humean contingentists and anti-Humean necessitarians in the philosophy of science is ongoing. One of the most important contemporary anti-Humeans is Alexander Bird. Bird calls the particular version of Humeanism he is opposed to 'categoricalism'. In his paper (2005) and in Chapter 4 of his book (2007) Bird argues against categoricalism about properties and laws. His arguments against categoricalism about properties are intended to support the necessitarian position he calls dispositional monism. His arguments against categoricalism about laws are intended to refute the contingent regularity view of laws (even in its sophisticated Lewisean version) and the nomic necessitation view of Armstrong (which involves a contingent necessitation relation). The general position Bird defends is that properties are necessarily related to the dispositions they bestow on their bearers and laws are necessary truths. I consider two of Bird's arguments against categoricalism about properties, and one of his arguments against the regularity view of laws. Maybe other arguments against categoricalism are persuasive. These, I submit, are not.

Debate between Humean contingentists and anti-Humean necessitarians in the philosophy of science is ongoing. One of the most important contemporary anti-Humeans is Alexander Bird. Bird calls the particular version of Humeanism he is opposed to 'categoricalism'. In his paper (2005) and in Chapter 4 of his book (2007) Bird argues against categoricalism about properties and laws.[1] His arguments against categoricalism about properties are intended to support the necessitarian position he calls dispositional monism. His arguments against categoricalism about laws are intended to refute the contingent regularity view of laws (even in its sophisticated Lewisean version) and the

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[1] In fact, this chapter contains Bird's main arguments against categoricalism. The rest of the book is largely concerned with countering arguments for categoricalism and exploring the consequences of its rejection.

nomic necessitation view of Armstrong (which involves a contingent necessitation relation). The general position Bird defends is that properties are necessarily related to the dispositions they bestow on their bearers and laws are necessary truths.

In the first section of the following I consider two of Bird's arguments against categoricalism about properties, and in the second, one of his arguments against the regularity view of laws. Maybe other arguments against categoricalism are persuasive. These, I submit, are not.

1. Bird on dispositional monism, quidditism and scepticism

Bird defends what he calls dispositional monism. He gives two arguments. One is that the rejection of dispositional monism commits one to quidditism, which has as little plausibility as haecceitism. The other is that the acceptance of quidditism required by the rejection of dispositional monism commits one to a particularly outrageous form of scepticism.

In what follows I dispute this reasoning. I do not deny that to reject dispositional monism commits one to quidditism, or that quidditism is on a par with haeceitism, but I query Bird's judgement of the intuitive implausibility of the latter, and deny that quidditism entails the scepticism Bird claims. His argument for this latter claim fails because he conflates the denial of an ascription of *de re* necessity with the denial of an assertion of *de dicto* necessity. The *de dicto* necessity is all one needs to rebut the charge of scepticism Bird highlights, and this is consistent with quidditism.

Dispositional monism is the thesis that all fundamental properties have essential powers (the powers of a property are the dispositions conferred on a thing by having the property). Strong dispositional monism is the thesis that 'the powers of a property are the essence of the property – they constitute what it is to be that property' (Bird 2007: 72). Thus, if strong dispositional monism holds, identity of powers across worlds entails identity of property. As Bird notes, strong dispositional monism is pretty much what Shoemaker (1980: 212) argues for: 'what makes a property the property it is, what determines its identity, is its potential for contributing to the powers of things that have it.'

To deny that a property has any powers essentially is to view it as a categorical property. Categoricalism about properties is the contention that all fundamental properties are categorical (Bird 2007: 67).

Categoricalism about properties entails quidditism, or haecceitism about properties: 'primitive identity between fundamental properties across all possible worlds' (Bird 2006: 71 quoting Black 2000). Here 'primitive' means an identity that is not dependent on identity of nomic or causal roles or powers more generally. Bird distinguishes various elements in quidditism in preparation for his critique. Most fundamental is (QA1) (there are also (QA2) and (QA3)):

(QA1) For all fundamental properties F and powers X there is a world where F lacks X

The elements of quidditism encapsulated in the (QA)s are incompatible with dispositional monism. A fourth element Bird distinguishes, which does not entail the (QA)s (since it is compatible with properties having their powers necessarily) is:

(QB1) Two distinct worlds, w_3 and w_4, may be alike in all respects except that: (i) at w_3 property F has powers C_1, C_2, …; (ii) at w_4 property G has powers C_1, C_2, …; (iii) F is not G.

This, of course, is what strong dispositional monism denies, that distinct properties may possess just the same powers (in distinct worlds).

Bird first focuses on (QA1). His argument against it is the analogue of Chisholm's famous argument against haecceitism (1967) (the simplest expression of which, Bird says, is that particulars have no essential properties (2007:74)).[2] Chisholm's argument is that if Adam and Noah have no essential properties (or all the same essential properties, say each is essentially a human being, but everything else is accidental) then it could have been that Noah occupied the Adam role while Adam occupied the Noah role (we can be brought to acknowledge this possibility by being led through a series of small exchanges of properties or we can just jump directly to it from the proposition that they have all their essential properties in common). Bird affirms that this conclusion is absurd and infers that haecceitism is false: particulars have (enough) essential properties (to distinguish them from one another). *Mutatis mutandis* he argues, the thesis of quidditism,

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[2] Note that this is not the sense Lewis (1986) defines.

and specifically (QA1), is false since quidditism has the commitment, for example, that charge might have had all the causal and nomic roles associated with gravitational mass, including proportionality with inertial mass, whilst gravitational mass had the causal and nomic roles of charge. But just as it is absurd to suppose that Adam might have played the Noah role while Noah played the Adam role, it is absurd to suppose that that charge might have played the gravitational mass role while gravitational mass played the charge role. Hence 'just as we should reject haecceitism we should reject quidditism, which we may do by allowing both particulars and properties to have essential properties' (2007: 75).

Of course, this is not much of an argument for those, like me, who see no good reason to deny that Adam and Noah might have role swapped and no good argument for the possession of any non-trivial essential properties (much less ones that distinguish them) by particulars.[3] We can agree that haecceitism and quidditism are on a par, but think both are in good order. More needs to be said (of course, on both sides).

Bird's second argument against quidditism, which focuses on (QB1), and tries to extract a commitment to the outrageous scepticism which I mentioned at the outset, is much more interesting.

It goes like this:

Consider:

(QB2) One and the same world w is such that: (i) at w a property F has powers C_1, C_2, …; (ii) at w property G has powers C_1, C_2, …; (iii) F is not G.

Bird notes that unlike (QB1), (QB2) allows a *single* world to contain distinct properties with the same powers. Nevertheless, he argues:

> I believe that (QB2) is implied by the quidditist picture. If identity is independent
> of powers, why shouldn't two properties possess the same powers in the same
> world? Furthermore, it looks as if we can get to (QB2) by iterated application of
> (QB1), in a manner similar to the Chisholmian strategy. In Chisholm's original

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[3] For a critique of the consensus view that particulars have essential properties see Mackie (2006). Of course, even if human beings have essential distinguishing properties (their origins, perhaps), it does not follow that this is true of all classes of particulars. Maybe all protons, for example, are essentially alike (have all their essential properties, if any, in common). If so, the quidditist may say, perhaps properties are more like protons than people.

story, we considered swapping the qualities of Adam and Noah one by one. But if instead we considered just half the story, the changes that happen to Noah, so gradually Noah loses his own properties and acquires Adam's without Adam undergoing any change, then we will end up with two particulars, Adam and Noah in the same world with identical qualities. The same strategy applied to properties gives us (QB2).

But if (QB2) is correct there might for all we know actually be two indistinguishable fundamental properties where it seems to us that there is only one (just as, if it is possible that two men might have all the properties possessed by Adam, it might be that there are actually two men where it seems to us that there is just one).[4] In a world where two distinct properties do the same causal work of responding to a force with an acceleration the term 'inertial mass' would fail to refer. If such a world is genuinely possible then for all we know it is actual and so we do not know whether *our* term 'inertial mass' refers. In general, we are left in the position of *never* knowing that our theoretical terms determinately refer (2007: 72). Bird concludes:

> Lewis accepts and indeed argues for the thesis that quidditism entails Humility, where Humility is the claim that we cannot know about the fundamental properties of nature … But *this* sceptical consequence of Humility is, I suggest, a very high price to pay for the Humean metaphysic. (2007: 78)

Maybe so, but the quidditist does not have to pay it, since Bird's argument is fallacious. It is easiest to see this by considering what he says about the original Adam/Noah story. Suppose Adam and Noah are essentially men but have no other essential properties (or have all other essential properties in common), and in particular, do not have their locations essentially. Then Adam might have had all of Noah's accidental properties (including his location) while Noah had all of Adam's. But it does

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[4] This step in the argument can be resisted, as Bird in effect notes (2007:79). Even if there is a (bad) possible world in which two properties have the same powers it may be distant enough from actuality to leave our actual knowledge secure. But as indicated below the quidditist does not need to make his stand here.

not follow that it could have been the case that Noah had all of Adam's accidental properties whilst Adam retained them, since it is consistent with the suppositions made about the essential properties of Adam and Noah that it is not possible for two men to occupy the same place(s) at (all) the same time(s).[5] Consistently with the suppositions about the essential properties of persons, it may be a *de dicto* necessary truth that no two persons are at all times spatially coincident. So even if the identities of Adam and Noah are independent of their locations (in the sense that each might have had a different spatiotemporal location from that which he in fact had, and each might have had the location the other in fact had), it does not follow that the two men could have had the same spatiotemporal location in the same possible world.[6] *Mutatis mutandis* if property identity is independent of powers in the sense implied by (QB1), i.e., that in distinct worlds distinct properties have the same powers, it does not follow that two properties can possess all the same powers in the same world.[7] Nor is this implied by quidditism,

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[5] Plausibly, I could have spent my entire life in Canada, if my parents had emigrated there before I was born or conceived. It hardly follows that there is a possible world in which there are two at-all-times-spatially-coincident persons – in Canada or anywhere else. Resistance to this would seem to require a general scepticism about the possibility of the truth of ascriptions of *de dicto* necessity in the absence of the truth of ascriptions of *de re* necessity. I shall not discuss such scepticism, except to note that the sceptic needs to accommodate the fact that on most accounts *de re* modal thought is conceptually richer than *de dicto* modal thought. For example, on Lewis's account the distinctive concepts one needs to understand *de dicto* modal thoughts are those of spatiotemporal relatedness (in terms of which 'possible world' is defined) and parthood; to understand *de re* modal thoughts one needs also to grasp the concept of counterparthood. Thus, Adam could have played the Noah role and Noah the Adam role since (under a generous counterpart relation) Noah is a counterpart of Adam and Adam is a counterpart of Noah, but it does not follow (and on Lewis's account of possible worlds and persons is not true) that there is a possible world in which two persons play the Adam role.
[6] Another example. If identity of original matter, plan and artist is sufficient for statue identity across worlds, then if statue S1, originally made from matter M1 according to plan P1 by artist A1 with spatiotemporal history H1 and statue S2, originally made from matter M2 according to plan P2 by artist A2 with spatiotemporal history H2 are both actual, each could have had alternative spatiotemporally history H3 (each could have been made by the artist it was originally made by, from the same matter according to the same plan but at a different time and place from that it was originally made at); it does not follow that there could have been in the same world two statues with the same spatiotemporal history.
[7] What would it be for two properties to possess all the same powers in the same world? Something like the following. On Earth the stuff in the seas and rivers is water, but on distant Twin Earth it is not, although the stuff in the seas and rivers there has the chemical formula H_2O also. The stuff on Twin Earth is distinct from the stuff on Earth because it has a property P2, whilst the stuff on Earth has property P1. No amount of scientific investigation could determine this, however, since P1 and P2 have the same powers – perhaps because each has no powers. Note that the statement that no two properties possess the same powers can be expressed as a constraint on the concept of a property: For any X, if X is a property then for any Y, if Y is a property and Y has the same powers as X, X = Y. Since properties are the referents of predicates this must have a second order formulation 'for all F, if Property (F) then (for all G, if Property (G) and Samepowered (F, G) then Identical (F, G))' in which the predicate variables 'F' and 'G' appear only in quantifiers or attached to individual variables or constants (so, e.g., 'Property (F)' may be ''for any x, if Fx

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since what the quidditist rejects is the possession by fundamental properties of (distinguishing) essential powers; he does not reject *de dicto* necessary truths. Nor can we get from (QB1) to (QB2) by iterated applications of (QB1) in a manner similar to the Chisholm strategy. In fact, we cannot 'consider just half of' the original Adam/Noah story if it is a *de dicto* necessary truth that no two men are entirely spatiotemporally coincident, since the possible world to which this supposition would lead does not exist.

Of course, I have assumed in this reply to Bird that Adam and Noah are essentially men. But this is not crucial. Suppose they are not. Suppose Adam and Noah have no non-trivial essential properties at all – each could have been a bare particular or a poached egg (this is not a supposition Bird would like, of course). It still does not follow that we can consider just half of the original Adam/Noah story, since this supposition is consistent with its being a *de dicto* necessary truth that two particulars are never entirely spatio-temporally coincident.[8] Pluralists, like Kit Fine (2003), allow the possibility of distinct all-time-coincident particulars, e.g., statues and lumps of clay, of distinct ontological categories. But even if this is a possibility, we need not be sceptical, as haecceitists, about the reference of 'Adam', since its reference-fixing description is presumably not of the form 'the particular …', but rather of the form 'the man …'.

Analogously, if we suppose that properties F and G have no non-trivial essential properties at all, it still does not follow that we can conceive of a world in which they have all the same powers, since the supposition that they have no non-trivial essential properties at all is *consistent* with its being a *de dicto* necessary truth that two properties never possess all the same powers (I am assuming that properties are essentially properties).[9] That this is consistent is enough to reveal the fallacy in Bird's argument.

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then x is a cause or x is an effect'). The meaning of the claim that it is a necessary truth that no two properties possess the same powers therefore depends on the interpretation of 'Property (F)', 'Samepowered (F, G)' and 'Identical (F, G)'.

[8] And even if there is a possible world in which Adam is the poached egg I had for breakfast this morning and a possible world in which Noah is the poached egg I had for breakfast this morning it does not follow that there is a possible world in which I had two indistinguishable and at-all-times coincident poached eggs for breakfast this morning.

[9] How might a quidditist argue that this is a *de dicto* necessary truth (should he wish to do so)? He may start from a contention of Bird's (2005: 452): it does great damage to our concept of a property to allow that there are two possible worlds differing only in that in one of them many particulars possess the same property and in the other 'there are many, many parallel properties [properties with exactly the same powers] , each of which is possessed by exactly one bearer' (just as it does great damage to our concept of a particular to allow that there are two possible worlds differing only in that in a certain spatiotemporal

That completes my case against Bird's attack on categoricalism about properties. But it is worth noting, as an addendum, that even if it is a *de dicto* possibility that two properties possess all the same powers, we need not be sceptical, as quidditists, about the references of our fundamental theoretical terms unless we insist that such terms invariably have their referents fixed by indexical-free descriptions of the form 'the property having such and such powers', that is, that such descriptions are the best we can do – just as, even if we allow the possibility of qualitatively indiscernible particulars, we need not be sceptical about the references of our particular-referring terms unless we disallow such reference-fixing descriptions as 'the twin on my left' (see Lewis 2001: 'The theoretical roles of positive and negative charge are not purely nomological roles; they are locational roles as well').[10] But only a straw quidditist will *both* allows that it is a *de dicto* possibility that two properties possess all the same powers *and* insist that we can only identify the properties to which we refer by using indexical-free descriptions of the form 'the property with such and such powers'.

2. Bird on the regularity view of laws and explanation

Bird argues that laws cannot fulfil their explanatory role if they are themselves regularities.

In what follows I suggest that his argument is unconvincing and make a proposal about where the proper focus of the debate lies.

The argument Bird gives rests on the notion of the ontological content of a fact or set of facts. In the simplest case a conjunctive fact has the combined ontological content of its conjuncts. Bird does not say exactly what the ontological content of a fact is (as he

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region in one there is exactly one thing of a certain kind, whilst in the other, in that spatiotemporal location there are many, many indistinguishable particulars of that kind).

[10] Of course, if it is possible for two properties to have the same powers *and* to be instantiated in exactly the same objects determinate reference for property terms cannot be guaranteed even by indexical reference fixing. If we suppose both that this is possible and that worlds in which it occurs are not too distant, then indeed scepticism about the determinate reference of our property terms seems appropriate. Compare the sceptical force of the supposition that it is possible that there are two at-all-time-coincident men in my shoes, alike in all their physical and psychological traits and dispositions. Or consider the version of 'Dr Jekyll and Mr Hyde' not written by Stevenson: when Jekyll takes the potion he transforms into Hyde, but Hyde is a very nice man and no one notices the difference.

notes, his argument does not require him to do so). But he lays down some principles connecting this notion with that of one fact's 'having sufficient ontological content to explain' another and that of explanation : (a) if the ontological content of fact A includes that of fact B, then if B explains E, then A has sufficient ontological content to explain E, and (b) if A has sufficient ontological content to explain E, and the ontological content of F is included in that of E, then A has sufficient ontological content to explain F, in particular, if A has sufficient ontological content to explain E&F then A has sufficient ontological content to explain E. These principles give *sufficient* conditions for the application of the notion 'has sufficient ontological content to explain' (introduction rules for the concept), but no necessary conditions (elimination rules). Bird does not require that if A has sufficient ontological content to explain B, A explains B.[11] He allows that this is probably not so if A is a conjunctive fact and B is explained by one of its conjuncts. The conjunctive fact that Vesuvius erupted and Krakatoa erupted has sufficient ontological content to explain the fact that Pompeii was destroyed, but it may be said that because of the redundancy (I take it that B is a redundant conjunct in A&B with respect to the explanation of E iff A entails something which explains E) it does not *actually explain* the destruction; what does is the fact that Vesuvius erupted.

Bird now notes that the facts:

(1) (Fa$_1$ & Ga$_1$) (Fa$_2$ & Ga$_2$) & ….

(2) a$_1$, a$_2$, … a$_n$ … are all the Fs there are

jointly entail that all Fs are Gs, though the entailment does not hold in reverse. So the conjunction of (1) and (2) includes the ontological contents of the regularity, he says, but goes beyond it.

Bird's argument is now that the conjunction of (1) and (2) does not have sufficient ontological content to explains the instances of the law that all Fs are Gs that the law

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[11] Bird's argument is a refinement of one of Armstrong's in which this distinction is not made (2007: 86). Armstrong argues that the fact that all diamonds are hard does not explain the fact that all observed diamonds are hard, since the former is equivalent to the conjunctive fact that all unobserved diamonds are hard and all observed diamonds are hard, neither conjunct of which explains the fact that all observed diamonds are hard. However, generally, if explanans B entails explanandum E, the conjunctive fact that (if E then B) and E is equivalent to B, but neither conjunct explains E. If we infer that the conjunctive fact does not explain E, this plausibly shows that in 'E because B' substitution of logical equivalents in the position of 'B' is not guaranteed to preserve truth-value.

should explain, so the regularity does not have sufficient ontological content to explain the instances of the law either, and so it does not explain the instances of the law.

What I dispute in Burge's argument is his claim that the conjunction of (1) and (2) does not have sufficient ontological content to explain the instances of the law. His argument for this, to be seen in a moment, does indeed establish that the conjunction of (1) and (2) does not *explain* any instance of the law, but since, as he notes in the case of conjunctive facts, something can have sufficient ontological content to explain, without explaining, it does not follow that the conjunction of (1) and (2) does not have sufficient ontological content to explain instances of the law, nor therefore that the regularity does not have sufficient ontological content to explain instances of the law, nor therefore that the regularity does not explain instances of the law.

Suppose that we want to explain why a_1 (this gemstone), which is F (a diamond) is G (hard). And suppose that the regularity theorist suggests that here the explanandum is Ga_1 and the explanans is that all Fs are Gs and Fa_1.

Bird argues against this. He notes that the explanans is entailed by the conjunction of (1) and (2) and Fa_1. So, he says, the ontological content of the latter conjunctive fact includes the ontological content of the proposed explanans. But Bird notes that the fact that (1) & (2) and Fa_1 is equivalent to the conjunction of:

(P) Ga_1

(Q) $(Fa_2 \& Ga_2) \& (Fa_3 \& Ga_3) \& \ldots$

(R) $a_1, a_2, \ldots a_n \ldots$ are all the Fs there are

(S) Fa_1.

Bird now offers the following argument that the conjunction of (P) and (Q) and (R) and (S) (and so the equivalent (1) & (2) & Fa_1) does not have sufficient ontological content to explain Ga_1:

> (P) is identical to the explanandum and so must be irrelevant to the power of the
> explanation. We should be able to ignore (P) without losing explanatory power.
> (Q) consists of facts about a_2, a_3, and so on, which do not bear on a_1; hence we
> should be able to exclude (Q) without loss. (R) being simply about which Fs there
> are does not contribute to the explanation of why a_1 is G. Lastly, (S) the fact that

a_1 is F might well contribute to the explanation of a_1's being G, for instance if Fness necessitates Gness. But in the absence of any other fact which has potential explanatory power, a_1's being F is by itself impotent to explain why a_1 is G. Hence (1) & (2) & Fa_1 does not have the resources to explain Ga_1. And so neither does the explanans in (iii) [all Fs are Gs and Fa_1], since that is entailed by (1) & (2) & Fa_1. (2007: 88)

But the key point is this. Of course this conjunctive fact does not *explain* Ga_1, but it is consistent with this that it *has sufficient ontological content to explain* it. Bird's remarks in the passage quoted are designed to undermine the claim that this is so. But since, as noted, Bird only lays down some principles ((a) and (b) above) concerning this latter manufactured notion which give *sufficient* conditions for its application a regularity theorist need not accept that his remarks undermine this claim (once sharply distinguished from the claim that the fact that (P) & (Q) & (R) & (S) *explains* Ga_1). The conjunctive fact that Vesuvius erupted and Krakatoa erupted has sufficient ontological content to explain the fact that Pompeii was destroyed on Bird's account, even though he allows that it does not explain the destruction. The same may be true in this case. Of course, there is this difference: we cannot identify a conjunct of the fact that (P) & (Q) & (R) & (S) which by itself explains or entails something which explains Ga_1, and so we cannot, in the same way as in the Vesuvius/Pompeii case, isolate some conjunct of (P) & (Q) & (R) & (S) as redundant (Bird has carefully designed the conjunction to ensure this). So Bird may here appeal to the following principle (c) if a fact has sufficient ontological content to explain a further fact and it contains no redundant conjunct (relative to the explanation of that further fact) then it explains that further fact. This states a *necessary* condition of a fact's having sufficient ontological content to explain another (it gives an elimination rule for the concept), so it is the type of principle Bird needs to appeal to if his argument is to go through.[12] But it is not obligatory for the regularity theorist to

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[12] In general, he needs to appeal to a principle of the form 'if A has sufficient ontological content to explain B then …A…'. Another obvious possibility is 'if A has sufficient ontological content to explain B it does not contain B as a conjunct' – but this, together with Bird's principle (a) entails that if A includes B and B explains E then A does not contain E, which is obviously false (take A to be the conjunction of the explanans B and the explanandum E). Another possibility is 'if A has sufficient ontological content to explain B then (if A contains B as a conjunct then A has a redundant conjunct relative to the explanation of

accept it. If he does he commits himself to the following if he accepts Bird's principle (a):

> If the ontological content of the fact A includes the ontological content of the fact B and B explains E and A contains no redundant conjunct relative to E then A explains E

in which the notion of a fact's 'having sufficient ontological content to explain' another fact does not appear. Bird notes that the notion of the ontological content of one fact including that of another is not clear – entailment is not enough since the (present mental) fact that I know that Vesuvius erupted entails, but does not include within its ontological content the (past non-mental) fact that Vesuvius erupted. The regularity theorist may therefore deny that the ontological content of (P) & (Q) & (R) & (S) includes that of the fact that all Fs are Gs and Fa_1 (Bird's only proposed sufficient condition for such inclusion is that if there are complex facts that have simpler or more basic facts as constituents then the latter are included in the ontological content of the former (2007: 87) – the regularity theorist may deny that the fact that all Fs are Gs and Fa_1 is a simpler or more basic fact which is a constituent of the fact that (P) & (Q) & (R) & (S)). But if he allows this he can dispute that the indented proposition[13] is true. That it is false (and hence also (c) if (a) is true), he can say, is shown by the fact that the regularity that all diamonds are hard together with the fact that this gemstone is a diamond explains why this gemstone is hard, whilst this conjunctive explanans is entailed by the fact that (P) & (Q) & (R) & (S), which itself contains no redundant conjunct relative to the fact that this diamond is hard, but does not explain the latter. Plausibly, he can say, the indented proposition is false because the sufficient condition it states for A to explain E does not include or entail a condition which is necessary, namely that A not contain E as a

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B)'. Together with Bird's principle (a) this entails that if A includes B and B explains E then if A contains E as a conjunct it has a conjunct which is redundant with respect to the explanation of E. But this seems false too. If B is the explanans and E the explanandum and the conjunction of the fact that if E then B and the fact that E exists and includes B (it certainly entails B if it exists) we have a counter-example since the conjunctive fact that (if E then B) & E contains no redundant conjunct with respect to the explanation of E.

[13] And also the proposition 'If A entails B and A is not a mental fact and B explains E and A contains no redundant conjunct (relative to E) then A explains E'

conjunct – as (P) & (Q) & (R) & (S) contains Ga_1 as a conjunct, which is why it does not explain it.[14]

The key point is that Bird and his opponents need not dispute about the application of the *manufactured* notion of one fact's 'having sufficient ontological content to explain' another; the focus of their debate should be on the indented proposition (or whatever related proposition follows, given (a) if Bird offers some substitute for (c) which will serve the same purpose).[15] And Bird has given no sufficient reason for accepting it.

Harold.noonan@nottingham.ac.uk

University of Nottingham
Nottingham, UK
Harold.noonan@nottingham.ac.uk

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[14] Another plausible counter-example to the indented proposition: If B is the explanans and E the explandum, take A to be (if E then B) &E. A entails B, B explains E, A has no redundant conjunct relative to the explanation of E, but A does not explain E. It may be said that the reason the conjunctive fact that Vesuvius erupted and Krakatoa erupted does not explain the fact that Pompeii was destroyed, though it has sufficient ontological content, is not the redundancy of the second conjunct, but its irrelevance. If so the defender of the regularity view may argue that (P) & (Q) & (R) & (S) contains irrelevant material. If it does not then the counterexamples given are equally plausible if interpreted as counterexamples to the result of substituting in the indented proposition 'irrelevant' for 'redundant' for the reason just given in the main text.

[15] I.e., some principle of the form 'if a fact A has sufficient ontological content to explain a fact B and …A… then A explains B', where the condition on A, ….., is satisfied by the fact that (P) & (Q) & (R) & (S). So, for example, the at first glance plausible principle 'if a fact A has sufficient ontological content to explain a fact B and A does not contain B as a conjunct then A explains B' is no use to Bird since (P) & (Q) & (R) & (S) contains Ga_1 as a conjunct.

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