

Why contingent facts cannot necessities make

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Blackburn (1993) has posed a dilemma for any account of the facts that make *A* necessary, a dilemma that (he believes) applies to any species of necessity (e.g., logical, natural, moral ...).¹ Suppose that the account identifies some truth *F* as making *A* necessary. Blackburn writes:

¹ I am (and, I presume, Blackburn is) concerned throughout only with the modality of facts – that is, with *de dicto* modality, not with *de re* modality. Moreover, I am (and, I presume, Blackburn is) concerned throughout only with modalities where all necessities are truths, i.e. where nothing impossible happens. I thereby set aside doxastic, bouletic, deontic, and teleological modalities, since (for example) that all persons must (i.e. are legally obligated to) obey the nation's laws does not entail that all do.

Now, either *F* will claim just that something *is* so, or it will claim that something *must* be so. If the latter ... there will be the same bad residual 'must' ... (1993: 53)

That is, even if *F* does indeed make *A* necessary, the account will not have succeeded in revealing what necessity consists in, since *F* is the very same kind of fact that the account was supposed to be explicating. Blackburn continues with the dilemma's other horn:

Suppose instead that *F* just cites that something *is* so. If whatever it is does not *have to be* so, then there is strong pressure to feel that the original necessity has not been explained or identified, so much as undermined. (1993: 53)

That is, the alleged necessity-maker cannot make genuine necessity if it is not necessary itself. *F* cannot endow *A* with necessity unless *F* has necessity to bestow in the first place; *F* cannot make *A* inevitable unless *F* is inevitable to begin with.

Blackburn would have moved too quickly had he gone from '*F* just cites that something *is* so' to '*F* does not *have to be* so.' After all, if *F* is 'Energy is conserved', then *F* just cites that something *is* so – namely, that the total quantity of energy is the same at every moment. But this fact *does* have to be so; its contrary is naturally (a.k.a. physically, nomologically) impossible. Accordingly, let's construe the two horns of Blackburn's dilemma in this way: Either *F* is necessary or *F* is not necessary (i.e. is contingent).

Now, however, the first horn of Blackburn's dilemma can perhaps safely be grasped: Although *F* is necessary, perhaps *F* can be *A*'s necessity-maker, without any 'bad residual "must"', as long as it is *F*'s truth, rather than *F*'s necessity, that is responsible for *A*'s necessity.² But the second horn of Blackburn's dilemma still appears impossible to grasp: if *F* is contingent, then intuitively *F* cannot be responsible for *A*'s necessity.

However, Hale (2002) has recently objected that Blackburn fails to furnish an effective argument against grasping this horn of the necessity-maker's dilemma. I will try to fill this need. I will begin by explaining the two weaknesses that Hale correctly identifies in the argument that he sees as motivating Blackburn's claim that a contingent truth cannot be a necessity-maker. Then I will offer a different argument for Blackburn's claim – one that avoids Hale's two objections. Having secured the intuitively plausible result that a contingency cannot be responsible for making some truth necessary, I will briefly discuss the result's significance for one prominent account of one species of necessity: Lewis's account of natural necessity.

² Hale (2002) pursues such an approach.

Here is Hale's suggestion for the argument that Blackburn might have used to show that if F makes A necessary, then F cannot be contingent. The argument uses three principles:

- (1) ' Q because P ' logically entails $\sim P \Box \rightarrow \sim Q$ ('Had it been the case that $\sim P$, then it would have been the case that $\sim Q$ ').
- (2) If $\Diamond R$ (' R is possible') and $R \Box \rightarrow S$, then $\Diamond S$.
- (S4) $\Box T$ (' T is necessary') logically entails $\Box \Box T$.

Now suppose that F is responsible for $\Box A$. By (1), $\sim F \Box \rightarrow \sim \Box A$. Suppose further that F is contingent. Then $\Diamond \sim F$. Hence, by (2), it follows that $\Diamond \sim \Box A$, and so $\sim \Box \Box A$. Hence, by (S4), $\sim \Box A$.

Hale (2002: 302–3) has two cogent reasons for believing that this argument fails to show that a contingent F cannot account for A 's necessity. First, (S4) – that any necessity is necessarily necessary – directly begs the question against the view that a contingent truth can be a necessity-maker. Second, (1) is implausible; for example, cases of causal overdetermination violate it (and also violate the weaker principle that replaces the 'would' counterfactual in (1) with the corresponding 'might' counterfactual).

I shall now offer a better argument that contingencies lack the modal strength to be necessity-makers.

Like the above argument, mine proceeds via counterfactuals. Let me begin by being explicit about a point that may already have been understood: I am using capital letters ($A, C, F \dots$) to represent hypothetical states of affairs that obtain (or not) in a given possible world purely in virtue of how things are *in that world*. So, for example, $(C \Box \rightarrow A)$ cannot be 'Had I been 6 feet 7 inches tall, then I would have been one foot taller than I actually am', since my being (in a given possible world) one foot taller than I actually am is a matter not just of how things are in that possible world (in particular, my being 6 feet 7 inches there), but also of how things are in the actual world (namely, my being 5 feet 7 inches there).

My argument begins with the plausible thought that A is necessary if and only if A would still have held under any possible circumstance C . (Although any species of modality – logical, natural, etc. – may be plugged into this principle, 'necessary' and 'possible' as they appear in a given instantiation of this principle must involve the same species of modality. Obviously, it is not the case that A is *naturally* necessary only if A would still have held under any *logically* possible circumstance.) In other words,

- (3) $\Box A$ if and only if for any C where $\Diamond C, C \Box \rightarrow A$.

One way to motivate (3) is with the thought that whatever might have happened, had a given possibility come to pass, must also be possible. (For example, if it was possible for more than 30 guests to have come to our

party, and if we might have run out of drinks had more than 30 guests arrived, then it was possible for us to have run out of drinks.) This thought is a slight extension of (2). From that thought, it follows that if $\Box A$, then, for any C where $\Diamond C$, it is not the case that had C obtained, then $\sim A$ might have obtained. Since it is not the case that $\sim A$ might have obtained, it is the case that A would have obtained, so for any C where $\Diamond C$, $C \Box \rightarrow A$, as (3) says.³

Indeed, (3) could even be strengthened. For example, suppose it is a matter of natural necessity that no body can travel faster than the speed of light. Then not only had we tried to accelerate a body to superluminal speeds, we would have failed (as (3) says, presuming that it is possible for us to try to accelerate a body superluminally), but also had we access to 23rd-century technology, then had we tried to accelerate a body superluminally, we would have failed. We could extend (3) to cover that nested counterfactual – that is, to require not merely that a given necessity A would still have held under any possibility C , but also that under any possibility C' , it would still have been the case that had C obtained (for any possibility C), then A would still have held. In other words, (3) could be strengthened to

- (4) $\Box A$ if and only if for any C and C' where $\Diamond C$ and $\Diamond C'$, $C \Box \rightarrow A$ and $C' \Box \rightarrow (C \Box \rightarrow A)$.

We can motivate this idea in the same fashion as before: Just as whatever might have happened, had a given possibility come to pass, must also be possible, so likewise had a given possibility come to pass, then whatever might have happened, had some other possibility come about, must also be possible.⁴

This relation between A 's necessity and various counterfactuals suggests that if F is A 's necessity-maker, then F is responsible for the truth of the

³ In the case of natural necessity, principles like (3) have frequently been accepted. Among those who have defended ideas along these lines are Bennett (1984), Carroll (1994), Chisholm (1946) and (1955), Goodman (1983), Horwich (1987), Jackson (1977), Lange (1993, 2000), Mackie (1962), Pollock (1976), and Strawson (1952). Seelau et al. (1995: 66) offer a psychological perspective on the way 'that counterfactual thoughts are restricted to those that are plausible given the natural laws operating in the world'. On the other hand, Lewis (1973, 1986) famously rejects (3), arguing that (under deterministic laws) the closest possible C -worlds are worlds where C holds by way of a small 'miracle' (violation of the actual laws). I cannot address these arguments here; for further discussion, see Lange 2000 and forthcoming b.

⁴ The nested counterfactual $C \Box \rightarrow (C \Box \rightarrow A)$ is not equivalent to $(C' \& C) \Box \rightarrow A$ even when C' and C are logically compatible. For example, suppose that you and I run a race, I win, and indeed I would always win were I to try. Had you won, then

various counterfactuals that (4) associates with A 's necessity. However, this cannot be quite right, since some of these counterfactuals may be too trivial to require F to secure them. For example, let natural necessity be the species of necessity under consideration and let A be that energy is conserved. Presumably, the truth of 'Had a uranium atom in this vial undergone radioactive decay sometime during the past 5 microseconds, then energy would still have been conserved' (one of the counterfactuals $C \Box \rightarrow A$ that (4) associates with A 's necessity) is secured by whatever fact F makes A naturally necessary. However, another one of the counterfactuals $C \Box \rightarrow A$ that (4) associates with A 's necessity is 'Had energy been conserved and I been wearing an orange shirt today, then energy would have been conserved.' The truth of this counterfactual conditional is secured not by whatever fact F makes A naturally necessary, but rather by whatever fact makes it logically necessary that 'Energy is conserved and I am wearing an orange shirt today' entails 'Energy is conserved'.

Nevertheless, although in this case C logically necessitates A , so that F (A 's necessity-maker) is not responsible for $C \Box \rightarrow A$, the nested counterfactuals in (4) include some non-trivial counterfactual conditionals beginning with C for which F must be responsible, such as 'Had energy been conserved and I been wearing an orange shirt today, then had a uranium atom in this vial undergone radioactive decay sometime during the past 5 microseconds, energy would still have been conserved'. Thus, I suggest a slightly refined version of the rough idea that if F is A 's necessity-maker, then F is responsible for the counterfactuals that (4) associates with A 's necessity:

- (5) If F is responsible for $\Box A$, then for any C where $\Diamond C$, there is either some truth $C \Box \rightarrow A$, or some truth $C \Box \rightarrow (C' \Box \rightarrow A)$ for some C' where $\Diamond C'$, for which F is responsible.

Let's now look at some examples where a given fact F explains why some counterfactual $C \Box \rightarrow A$ holds. (Analogous considerations will apply to a case involving instead some nested counterfactual truth $C \Box \rightarrow (C' \Box \rightarrow A)$.) Consider a typical case where it is true that had the match been struck, it would have lit. Why is this counterfactual true? Because the match is dry and oxygenated (and various laws of nature hold). This explanation goes through only because the match would still have been dry and oxygenated (and those laws would still have held), had the match been struck. Otherwise, the fact that the match is actually dry and oxygenated is irrelevant to what would have happened, had the match

had I tried, I would have won. That nested counterfactual is obviously not equivalent to the false counterfactual conditional 'Had you won and I tried, then I would have won'.

been struck.⁵ Likewise, suppose the electric field strength E at a given spatiotemporal location is 1 dyne per statcoulomb. This fact is responsible for the fact that had that location been occupied by a 5 statcoulomb charged body, then that body would have experienced an electric force of 5 dynes. This explanation presupposes that the electric field at that location would have been no different, had a 5 statcoulomb charged body been present there.

A case of preemption satisfies the same principle. Suppose that Suzy and Billy are throwing rocks at a bottle. Suzy's rock arrives first, breaking the bottle. Had Suzy not thrown her rock, the bottle would still have broken, because Billy's rock would have broken it. This explanation of the counterfactual demands that had Suzy not thrown her rock, Billy would still have thrown his rock; otherwise, had Suzy not thrown her rock, the bottle would not have broken.

These examples suggest the following principle:

- (6) If F is responsible for $C \Box \rightarrow A$ [or for $C \Box \rightarrow (C' \Box \rightarrow A)$], then $C \Box \rightarrow F$.

Another way to motivate (6) is to deduce it from (7) and (8):

- (7) If F is responsible for $C \Box \rightarrow A$, then had C obtained, then F would have been responsible for A .
 (8) In any possible world: F is responsible for A only if F .

Whereas (8) is obvious, (7) is nontrivial: it says that if F is responsible for A 's holding in the closest C -world, then in the closest C -world, F is responsible for A 's holding. Notice that (7) is borne out in our examples. For instance, in the closest possible world where a 5 statcoulomb charge is present at the given location, its experiencing a 5 dyne electric force there is accounted for by the electric field strength there being 1 dyne per statcoulomb.

I can now offer my argument that a contingent truth F cannot be responsible for A 's necessity. If F is responsible for $\Box A$, then by (5), for any C where $\Diamond C$, there is either some truth $C \Box \rightarrow A$, or some truth $C \Box \rightarrow (C' \Box \rightarrow A)$ for some C' where $\Diamond C'$, for which F is responsible. Hence, by (6), $C \Box \rightarrow F$ for any C where $\Diamond C$. Therefore, by (3), $\Box F$.

Intuitively, the argument is that if F is responsible for A 's necessity, then F is responsible for A 's holding in all possible worlds; and so (by (7)) in any possible world, F is responsible there for A 's holding; and hence (by (8)) F

⁵ Here we are very close to the idea behind Goodman's (1983) 'cotenability' requirement on the 'relevant conditions' that, on his view, help to make a given counterfactual conditional true.

holds in any possible world; and so F is necessary.⁶ If F is contingent, then F is not around in some possible world to make A hold there, and so F cannot be responsible in that world for A 's holding there (even if A holds there), and so F cannot be responsible for A 's necessity. This argument does not depend on either of the two problematic premisses in the argument that Hale supplies to Blackburn.

That (for any species of necessity) a fact F lacking necessity cannot make A necessary imposes a severe constraint on accounts of what necessities are. For example, consider Lewis's 'Best System Account' (Lewis 1973: 72–77; 1986; 1999), according to which A is a natural law in virtue of belonging to the deductive system of truths with (roughly speaking) the best combination of simplicity and informativeness regarding the 'Humean mosaic': the global space-time history of instantiations of categorical, perfectly natural properties possessed intrinsically by space-time points or occupants thereof.⁷ On this view, F (the fact that A belongs to the 'best system') is a contingent fact; it is not a natural necessity. For example, if A is a typical natural law (e.g. 'Every particle experiencing a net force is undergoing acceleration'), then F (that A belongs to the best system) logically entails $\sim C$, where C is

At each moment in the universe's history, there is no matter except for a single particle moving uniformly.

After all, if C were true, then the best deductive system would not contain A . (Presumably, it would contain 'All particles at all times are moving uniformly', for instance, and the addition of A to the system would then contribute no information regarding the Humean mosaic but would diminish the system's simplicity; see Earman 1986: 100.) But $\sim C$ is an accidental truth; it does not follow from the laws.⁸ Since F logically entails $\sim C$ and it is not necessary that $\sim C$, it is not necessary that F . Therefore, as

⁶ We are concerned with A 's possessing some particular species of necessity (logical, natural...), and so 'all possible worlds' here refers to the corresponding species of possibility. Thus, for a species of necessity weaker than logical necessity (such as natural necessity), 'all possible worlds' does not include all logically possible worlds.

⁷ This brief summary omits various subtleties, such as how Lewis's account incorporates chances and statistical laws. These omissions do not affect my argument.

⁸ Although Lewis's view entails that the actual laws's *lawhood* is logically inconsistent with C , the laws's *truth* is logically consistent with C . Lewis accepts that it is naturally necessary that C in a given world if and only if C is true in every world where the given world's laws are all true.

we have learned, *F* cannot be responsible for *A*'s necessity, contrary to Lewis's account.⁹

Of course, if the ground of *A*'s necessity must consist of necessities, then any account of what it is for *A* to possess a given species of necessity can appeal only to facts that also possess such necessity. No vicious circularity need result: if *F* renders *A* necessary, then although *F* must also be necessary, the facts that render *F* necessary need not include *A*.¹⁰ Moreover, that *F* can make *A* necessary only if *F* is necessary fails to show that no illuminating account can be given of the grounds of *A*'s necessity. Rather, it shows that an account that purports to take any necessity *A* and reveal the facts *F* that make it necessary must be applicable to *F* as well.

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⁹ Of course, Lewis rejects (3) and so would not accept my argument that contingent facts cannot help to make a given truth necessary. (But Lewis does regard the natural laws as possessing a variety of necessity – see, for instance, Lewis 1999: 232.)

¹⁰ In my (forthcoming a, b), I argue that for any fact *A* possessing a given species of necessity, there are other facts *B*, *C*, ... that are likewise necessary and responsible for *A*'s necessity, and this regress continues endlessly without repetition. I argue that this picture accounts not only for the power of *A*'s necessity to explain why *A* obtains, but also for the fact that the genuine modalities fall into a natural ordering (from stronger to weaker).

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