

Properties, laws, and worlds

Deborah C. Smith

Department of Philosophy, Kent State University, Kent, OH 44242, USA

ABSTRACT

Jonathan Schaffer argues against a necessary connection between properties and laws. He takes this to be a question of what possible worlds we ought to countenance in our best theories of modality, counterfactuals, etc. In doing so, he unfairly rigs the game in favor of contingentism. I argue that the necessitarian can resist Schaffer's conclusion while accepting his key premise that our best theories of modality, counterfactuals, etc. require a very wide range of things called 'possible worlds'. However, the necessitarian can and should insist that, in many cases, these worlds are not metaphysically possible. I will further argue that, having taken such a stance, the necessitarian has additional resources to respond to Schaffer's other arguments against the view.

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Jonathan Schaffer's 'Quiddistic Knowledge' takes as a central focus the question 'Is the relationship between properties and laws (powers, nomic regularities, etc.) metaphysically necessary or contingent?' (Schaffer 2005, 2). He provides several arguments against views that take the relationship to be necessary ('necessitarianism') and ultimately defends a view according to which the relationship is contingent ('contingentism'). One of his main arguments against necessitarianism turns on reframing the central question as 'What range of possible worlds should one countenance?' (Schaffer 2005, 5). He goes on to argue that our best theories of modality, counterfactuals, propositions, conceivability, and recombination all require a wider range of possible worlds than allowed for by necessitarianism. Thus, he concludes, we have reason to accept contingentism. While necessitarians can respond by arguing that our best theories of modality, counterfactuals, etc. do not require appeal to possible worlds or do not at any rate require appeal to a wider range of worlds than those countenanced by the necessitarian,¹ that is not their only option. I will argue that the necessitarian

CONTACT Deborah C. Smith  dcsmith1@kent.edu

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can resist Schaffer's conclusion while accepting his key premise that our best theories of modality, counterfactuals, etc. require a very wide range of things called 'possible worlds'. However, the necessitarian will insist that, in many cases, these worlds are not metaphysically possible. I will further argue that, having taken such a stance, the necessitarian has additional resources to respond to some of Schaffer's other arguments against the view.

1.

Schaffer identifies three types of necessitarianism and two types of contingentism. He presents them in an order that he takes to reflect the range of possible worlds countenanced by each view from most to least restrictive. As such, the set of worlds countenanced by a given view will be a proper subset of those countenanced by the view that follows:

Modal necessitarianism holds that the relationship between properties and laws is necessary because 'the actual laws of nature hold with *metaphysical necessity*.' (Schaffer 2005, 2)²

Although not explicitly built into his initial presentation of modal necessitarianism, Schaffer later makes clear that modal necessitarianism rules out the possibility of alien laws (Schaffer 2005, 3). So, this view countenances only metaphysically possible worlds in which all and only actual laws govern actual properties. Call these 'MN worlds'.

Nomic necessitarianism holds that the relationship between properties and laws is necessary because 'properties are individuated by their *nomological roles*.' (Schaffer 2005, 2)

Schaffer takes nomological roles to be purely structural in nature asserting that '[t]he essence of a property, on this view, is its place in the Ramsified lawbook' (Schaffer 2005, 2). As he sees it, this view will countenance all of the MN worlds, but will also allow for worlds with alien properties and alien laws. Call the worlds countenanced by nomic necessitarianism 'NN worlds'.

Causal necessitarianism holds that the relationship between properties and laws is necessary because 'properties are individuated by their *causal powers*.' (Schaffer 2005, 2)

Here, causal powers are taken to be more robust than mere structural regularities. This view will countenance all of the NN worlds as well as worlds with symmetric laws – 'laws involving two or more properties in structurally indiscernible roles' (Schaffer 2005, 3). Such worlds cannot be countenanced by the nomic necessitarian since if roles *r1* and *r2* are structurally indiscernible, *r1* and *r2* are one and the same nomological role and, hence, govern one and the same property. Call the worlds countenanced by causal necessitarianism 'CN worlds'.

Anti-quiddistic contingentism holds that the relationship between properties and laws is contingent because 'properties are world-bound entities, which can at best be counterparts of properties in other worlds, in a way partly determined by powers.' (Schaffer 2005, 4)

Although he never explicitly argues so, Schaffer seems to hold that the CN worlds are a proper subset of those countenanced by anti-quiddistic contingentism (see Schaffer 2005, 5). Call the worlds countenanced by the anti-quiddistic contingentist 'AC worlds'.

Quiddistic contingentism holds that the relationship between properties and laws is contingent because 'properties are transworld entities that can freely recombine with any lawmakers.' (Schaffer 2005, 4)

This view, which is the view favored by Schaffer, includes all of the AC worlds as well as worlds with merely quiddistic differences. Two worlds w_1 and w_2 differ quiddistically if they differ only in that, in w_1 , property p_1 has nomological role r_1 and property p_2 has nomological r_2 , and in w_2 , p_1 has r_2 and p_2 has r_1 . Such world pairs are ruled out by anti-quiddistic contingentism.³ So, the AC worlds are a proper subset of those countenanced by quiddistic contingentism. Call the worlds countenanced by quiddistic contingentism the 'QC worlds'.

Even though it is far from clear that Schaffer has correctly identified the set theoretic relations between the range of worlds countenanced by each of the five views,⁴ it would seem that modal necessitarianism, nomic necessitarianism, causal necessitarianism, and anti-quiddistic contingentism all countenance a set of worlds that is a proper subset of the QC worlds. After all, every MN, NN, CN, and AC world will be a world with some set of properties combined with some set of nomological roles and hence among the QC worlds. So, all Schaffer needs for his argument to go through, if it is otherwise successful (a big 'if'), is for there to be a QC world that is not among the MN, NN, CN, or AC worlds. And that seems eminently plausible.

From here, Schaffer's argument in broad outline is as follows:

- (1) The set of metaphysically possible worlds countenanced by each of the necessitarian views is a proper subset of the worlds countenanced by (quiddistic) contingentism (the QC worlds).⁵
- (2) Our best theories of modality, counterfactuals, propositions, conceivability, and recombination require countenancing all of the QC worlds.
- (3) Thus, (quiddistic) contingentism is the preferable view concerning the relation between properties and laws.

If we accept premises (1) and (2) (and I will not further question either), Schaffer's argument is *prima facie* compelling. However, it should also be clear that its plausibility trades on framing the question of which metaphysical view concerning the relation between properties and laws we ought to accept as the question of which range of possible worlds our best theories about modality, counterfactuals, etc. commit us to. It is that very move that I think the necessitarian can and should reject.

2.

To be sure, (quiddistic) contingentism does countenance a wider range of *metaphysically* possible worlds than do the various types of necessitarianism.

However, there is no reason (or at least Schaffer has offered us none) to think that the worlds required by our best theories about modality, counterfactuals, etc. must all be among the metaphysically possible worlds.⁶ Thus, the fact (if it is one) that our best theories about modality, counterfactuals, etc. require postulating all of the QC worlds does not entail that all of the QC worlds are indeed metaphysically possible.

One of the first things to note is that an argument analogous to Schaffer's could be used to establish that the truths of mathematics are contingent. Since, both Goldbach's conjecture and its negation are epistemically possible (and, hence, plausibly both meaningful and conceivable), we need a range of possible worlds that includes worlds where Goldbach's conjecture is true and worlds where it is false. So, regardless of whether or not Goldbach's conjecture is true, the range of worlds required for our best theory of epistemic modality (and of content and conceivability) will outstrip the worlds countenanced by the mathematical necessitarian. Contrary to conventional wisdom on the subject, mathematical statements are contingent! But surely this mathematical contingentism comes too cheaply.⁷ Indeed Schaffer's strategy is so biased toward extreme contingentism that even his preferred quiddistic contingentism would fall prey to it if there is any type of modality requiring worlds that outstrip the QC worlds. (Perhaps our best theory of propositional content would require such worlds.) To be sure, the relationship between properties and laws would still be contingent were that the case, but Schaffer's quiddistic contingentism would not be the correct view.

What our best theories of modality, counterfactuals, etc. plausibly require is a very broad range of things called 'worlds'. These need not be *possible* worlds on any *prima facie* plausible notion of modality⁸ and a fortiori need not be metaphysically possible worlds.⁹ Indeed, these need not be *worlds* in any intuitive sense at all.¹⁰ Different types of modality will specify a different subset of these 'worlds' as the possible worlds. So, for example, the metaphysically possible worlds might be specified as the set of worlds consistent with true metaphysical principles¹¹ and the epistemically possible worlds might be specified as the set of worlds consistent with what we (now) know.¹² Questions about whether or not such and such is contingent or necessary then arise within this restricted context. So, when we say that (if true) Goldbach's conjecture is necessary, we are considering only a restricted range of metaphysically possible worlds. We needn't consider the set of worlds required for epistemic modality which includes both worlds in which Goldbach's conjecture is true and worlds in which it is false. Plausibly, the same is true with respect to the relevant modality within which the debate about the relation between properties and laws takes place. When we ask whether this relation is contingent or necessary, we are considering only the metaphysically possible worlds. To the extent that it is appropriate to view the metaphysical debate between the various views concerning properties and laws as a debate about the range of possible worlds, it is more

properly seen as a debate about the range of metaphysically possible worlds and not about the range of any and all worlds needed for our best theories of modality, counterfactuals, etc.

Wilson (2013) has recently argued (following Fine (2002) and Bird (2007)) that the (modal) necessitarian should not take physical necessity to be a restriction on metaphysical modality.

[T]he appeal to restricted necessity raises a new explanatory demand with a non-obvious answer: if it is unrestrictedly possible for like charges to repel, why should it matter to us whether it is impossible in some restricted sense? [...] Why should we be interested in a form of necessity restricted to worlds which share the actual laws (natural necessity), any more than we are interested in a form of necessity restricted to worlds which contain wombats (wombat-necessity)? And doesn't the restriction strategy render the natural necessity of the laws themselves a 'cheap and trivial' matter of self-entailment? (Wilson 2013, 656)

For analogous reasons, one might worry that the response to Schaffer that I've presented is not a live option for the necessitarian. However, I think that the necessitarian has a ready answer to Wilson's question. It starts with the realization that the unrestricted set of worlds required for our best theories of modality, counterfactuals, etc. plausibly include worlds that are metaphysically impossible even by the contingentist's lights (such as worlds in which Golbach's conjecture is false on the assumption that it is actually true). When we then ask whether the metaphysical relationship between properties and laws is necessary or contingent, we are only interested in the restricted set of metaphysically possible worlds. As such, the restriction is invoked by the very context of the debate.¹³ The debate joined, the modal necessitarian will now argue that all of the metaphysically possible worlds are worlds containing actual properties governed by actual laws. In doing so, the necessitarian is making a substantive, non-trivial claim *about* the metaphysically possible worlds, a claim denied by the contingentist. If the necessitarian is correct, the relation between properties and laws is necessary in the only sense that matters in the context. The fact that it would be contingent on a modality invoking worlds that are not metaphysically possible is irrelevant. The necessitarian would only be guilty of making a cheap and trivial claim if the very *debate* between necessitarians and contingentists is itself construed as being joined initially in a restricted set of worlds in which the actual laws hold. (I believe that this response is available *mutatis mutandis* for either the nomic necessitarian or the causal necessitarian).

Thus, metaphysical modality may plausibly be taken by both the necessitarian and the contingentist to be a restricted modality in the sense that it involves only a proper subset of the worlds required by our best theory concerning the varieties of modality (deontic, minimal alethic, conceptual, epistemic, etc.). It should be noted, however, that taking metaphysical modality to be a restricted modality in that sense does not preclude holding that metaphysical modality involves the broadest sense of genuine possibility. The metaphysically

impossible 'worlds' invoked by other modalities need only be *regarded as possible*; they need not be in any meaningful sense genuinely possible.¹⁴ If this is correct, the mere fact (if it is one) that the QC worlds are invoked by our best theory concerning the variety of modalities provides us no reason for thinking those worlds are among the metaphysically possible worlds. Reaching that conclusion requires an independent argument for quiddistic contingentism.

3.

The previous section focused largely on the use of possible world's semantics to capture various notions of modality. However, once we distinguish between the set of 'worlds' required for our broadest notion of modality and the set of metaphysically possible worlds, the necessitarian can address Schaffer's other arguments in ways not anticipated. In this section, I will examine Schaffer's argument from counterfactuals. In Section 4, I will examine his arguments from propositions, conceivability, and recombination. In Section 5, I will examine his argument that the necessitarian is pulled in inconsistent directions such that no single version of the view is adequate.

On one possible worlds semantics for counterfactuals, a counterfactual conditional of the form 'if it were the case that φ , it would be the case that ψ ' is true (in the world of evaluation) if and only if (i) there is at least one world in which it is the case that φ and (ii) the closest such world (to the world of evaluation) is a world in which it is the case that ψ .¹⁵ Now, it is plausible to suppose that there are true counterfactual conditionals with antecedents that run counter to the actual laws (e.g. the conditional 'if it were the case that like charges attracted, the universe would have a very different structure'). Thus, there must be at least one world in which the antecedent is true (like charges attract). As Schaffer notes, such a world would be a 'miracle' world (i.e. a metaphysically impossible world) from the perspective of necessitarianism. If the relevant set of worlds that factors into the truth conditions of counterfactuals is the set of metaphysically possible worlds, the necessitarian will seemingly be forced to say that any counterfactual whose antecedent invokes a miracle will be trivially false. But that contradicts the previous intuition that there are true counter-legal conditionals.

But Schaffer argues that the necessitarian has an even bigger problem. Suppose that we wanted to assert (consistent with Coulomb's law) that, if there were two like charges instantiated at a given location where there are not in fact two like charges, they would repel. According to Schaffer, this too requires a miracle world. '[T]o implement the antecedent that there are like charges at a given location (assuming that this is actually false), we need to imagine some miraculous swerving of say, two electrons, that brings them to said location' (Schaffer 2005, 8). If the laws are deterministic, the closest non-miracle world would be one in which the initial state of its universe differed from the actual universe. It would appear that a necessitarian who does not want to assert that any change

with respect to what is actual requires a change in the initial state of the universe must hold that all counterfactuals (no matter how plausible) are trivially false.

Wilson (2013, 660–663) provides a necessitarian response to Schaffer's argument from counterfactuals. Like Schaffer, Wilson seems to hold that the worlds appealed to in a possible world's semantics for counterfactuals must be metaphysically possible worlds. He addresses the problem with counterfactuals in general by adopting a modal necessitarianism with indeterministic laws. 'The assumption that the laws are necessarily indeterministic allows the modal necessitarian to account for counterfactuals without appealing to worlds involving violations of the law' (Wilson 2013, 661). Provided that modal necessitarians are comfortable adopting indeterminism, it would seem that they can adopt a possible world semantics for a wide range of counterfactuals. Even so, Wilson concedes that explicitly counter-legal conditionals (e.g. 'if it were the case that like charges attracted, the universe would have a very different structure') cannot be given a possible world semantics by the necessitarian. However, he argues that this is really of no moment. On the necessitarian view, worlds in which the actual laws do not hold are metaphysically impossible. As such, explicitly counter-legal conditionals are for the necessitarian a species of counter-possible conditional.

But this limitation derives from an inherent limitation of possible-worlds semantics for counterfactuals. Like it or not, everyone is stuck with a large class of 'counter-possible' counterfactuals which cannot be given non-trivial truth-conditions in possible worlds terms. (Wilson 2013, 661)

If Wilson is correct then, if we continue to assume that our best theory of the truth conditions for counterfactual conditionals involves appeal to possible worlds, it would seem that everyone must acknowledge that some *prima facie* plausible counterfactual conditionals are trivially false. The only difference between the necessitarian and the contingentist in this regard would be the range of counterfactuals with trivial truth conditions.

While many may find this type of response adequate, others will want to maintain that at least some counter-possible conditionals can be given non-trivial truth conditions. For example, some would regard as non-trivially true the counter-logical conditionals: 'if it were the case that neither "P" nor "not-P" were true, then an intuitionistic logic would be appropriately adopted'¹⁶ and 'if it were the case that both "P" and "not-P" were true, then a paraconsistent logic would be appropriately adopted'. On the assumption that metaphysically possible worlds obey a classical logic (or at least do not obey a paraconsistent logic), these conditionals count as counter-possibles for the necessitarian and contingentist alike.¹⁷ What is one who both accepts Schaffer's premise that our best theory of the truth conditions for counterfactuals involves a (so-called) possible worlds semantic and wants to provide non-trivial truth conditions for counter-possible conditionals to do?

It seems to me that an obvious solution is to reject the background assumption (apparently held by both Schaffer and Wilson) that the 'worlds' required for

a possible worlds semantics for counterfactual conditionals must be metaphysically possible worlds. One can instead hold that the range of 'worlds' required is broader than the set of metaphysically possible worlds.¹⁸ On such a view, the criteria governing closeness are plausibly taken to be contextually sensitive. One plausible criterion will be: where there is a metaphysically possible world in which the antecedent of the counterfactual is true, that world will be closer to the actual world than any metaphysically impossible world.¹⁹ If not, other criteria for judging the closeness of metaphysically impossible worlds to the actual world will have to be brought to bear. To be sure, there will be cases in which necessitarians and contingentists disagree about whether there is a metaphysically possible world in which the antecedent is true. But that would seem to be no more problematic than the fact that, given Alastair Wilson's approach, the necessitarian and contingentist disagree about which counterfactuals have trivial truth conditions on a possible worlds semantics.

4.

Schaffer's arguments from our best theories concerning propositions and conceivability trade on the following premises, respectively (see Schaffer 2005, 10):

(8) There is a contentful proposition that like charges attract; and

(11) It is conceivable that like charges attract.

According to Schaffer (2005, 9), a proposition is best thought of as a set of metaphysically possible worlds (worlds at which *p* is true). He further asserts that '[i]f it is conceivable that *p*, then there is a possible world at which *p* is true' (2005, 9). To be sure, if our best theories of propositional content and of conceivability require the postulation of worlds of which the content of the proposition/what is conceived is true, the worlds required to render (8) and (11) true outstrip the MN, NN, and CN worlds.²⁰ But so what? Why should our best theory of propositional content or of conceivability entail that the relevant set of worlds is exhausted by the metaphysically possible worlds? Just as the fact that both the proposition expressing Goldbach's conjecture and the proposition expressing its denial are plausibly conceivable does not show that mathematical statements are in any relevant sense contingent,²¹ the fact that the propositions expressing Coulomb's law and its negation are both conceivable is not germane to whether Coulomb's law is metaphysically contingent. The necessitarian may (as Handfield 2004 does) legitimately hold that there are conceivably possible worlds that outstrip the metaphysically possible worlds.²² With the postulation of conceivably possible worlds and in the absence of cogent reasons to think that these must be genuinely *metaphysically* possible worlds, the necessitarian can (if so wished) take meaningful propositions to be coarse-grained sets of conceivably possible worlds while accepting both (8) and (11).²³

Schaffer's argument against necessitarianism from recombination is as follows (see Schaffer 2005, 10):

(13) If the relation between properties and their powers is necessary, then some combinations of charge and acceleration would be impossible;

(14) All combinations of charge and acceleration are possible;

(15) Therefore: the relation between properties and their powers is not necessary.

Premise (13) will arguably be true no matter how we read the modal terms it contains provided that we don't equivocate between the modalities invoked in its antecedent and consequent.²⁴ But, how are we to read 'possible' in (14)?

Schaffer wants us to take our cue from what he identifies as the connection between worlds and recombination: 'if *x* and *y* are distinct existences, then there is a possible world with just *x*, a possible world with just *y*, and a possible world with both *x* and *y*' (Schaffer 2005, 9). However, this doesn't really settle the issue once we acknowledge that there are modalities that plausibly outstrip what is metaphysically possible. It is important to note that the antecedent of the recombination principle involves an implicit modal operator that is all by itself ambiguous between various types of modality.²⁵ Are *x* and *y* being asserted to be metaphysically distinct, conceptually distinct, epistemically distinct, etc.?²⁶ How we interpret that modality will dictate how we should interpret the modality implicit in the notion of a possible world in the consequent of the recombination principle and thus how we interpret 'possible' in (14). Clearly, on the metaphysical modality reading of the recombination principle, the necessitarian will want to reject (14) on the grounds that charge and acceleration are not metaphysically distinct.²⁷ However, I would submit that the necessitarian can accept (14) if the recombination principle is interpreted as involving, e.g. a conceptual modality. If 'possible' in (14) just means 'conceivable', (15) would then amount to no more than the claim that it is conceivable that there would be a different relationship between properties and their powers. In the absence of cogent reasons to think that the conceivably possible worlds must be metaphysically possible, this conclusion is simply irrelevant to the truth or falsity of necessitarianism.

In order for the argument from recombination to work, we must ensure that the modality invoked is metaphysical modality and that (14) is true on that modality. Quiddistic contingentism holds that (14) is satisfied when 'possible' is read as a metaphysical modality. Proponents of each of the three types of necessitarianism will disagree. (14) is plausibly false on anti-quiddistic contingentism as well when taken as invoking metaphysical modality. According to the anti-quiddistic contingentist, properties are world-bound entities that can at best stand in counterpart relations to properties in other worlds. The fact that the counterpart relation is partly determined by laws (or powers) would then seem to place at least some restrictions on the recombination of counterpart properties and laws. So, it would seem that to have reason to believe that (14) is true when taken as invoking metaphysical modality, we would have to have antecedent reason to accept quiddistic contingentism. Schaffer's argument appears to simply beg the question.²⁸

5.

Importantly, unlike the responses Schaffer anticipates or the ones actually provided by Wilson (2013), none of my responses to his arguments trade on any particular version of necessitarianism. All that is required is an acknowledgment that it is wrong headed to simply assume that all of the worlds required by our best theories of modality, counterfactuals, propositions, etc. will be metaphysically possible worlds. This also allows for a response to Schaffer's final argument that necessitarianism 'dissolves, on inspection, into an incoherent heap' (Schaffer 2005, 13).

Schaffer first argues that the necessitarian is pulled in the direction of modal necessitarianism on the grounds that two common necessitarian arguments, if valid, fail to support either nomic or causal necessitarianism. However, he immediately goes on to argue that both arguments are invalid (Schaffer 2005, 6–7). If he is correct on that score, the necessitarian should feel no pressure to adopt modal necessitarianism stemming from these arguments. While, I am sympathetic to his reasons for thinking that what he calls 'the argument from sustaining counterfactuals' is invalid,²⁹ it is far from clear that what he calls 'the argument from natural necessity' is invalid.

As formulated by Schaffer, the argument runs as follows (Schaffer 2005, 6):

- (1) If the relation between properties and their powers is contingent, then like charges *might not* repel;
- (2) Like charges *must* repel;
- (3) Therefore: the relation between properties and their powers is not contingent.

Schaffer (2005, 7) suggests that the argument is invalid due to an equivocation between the use of an unrestricted modality in (1) and a more restricted modality of natural necessity in (2). However, it seems to me that the argument could be reformulated so as to remove this equivocation as follows:

- (1*) If the relationship between properties and their powers is contingent on a natural modality, then there will be naturally possible worlds in which like charges do not repel;
- (2*) There are no naturally possible worlds in which like charges do not repel;
- (3*) Therefore, the relationship between properties and their powers is not contingent on a natural modality.

Note that, on this way of reformulating the argument, no assumption is made about which possible worlds are the naturally possible worlds. The argument is thus consistent with all three forms of necessitarianism. Unfortunately, for that very reason, its conclusion does not all by itself obviously establish necessitarianism. Whether or not any form of necessitarianism follows from (3*) depends

upon whether or not metaphysical modality outstrips natural modality. For example, suppose that we thought that the naturally possible worlds were simply the worlds in which the actual laws hold. In that case, since contingentists take the metaphysically possible worlds to outstrip the naturally possible worlds, they can cheerfully accept (3*). The same holds true *mutatis mutandis* if we instead take the naturally possible worlds to be ones with laws that are structurally equivalent to ours or in which the identity of properties is governed by the causal powers of objects that instantiate them. So, we would have to have antecedent reason to think that some version of necessitarianism is true (even if we remain agnostic about which one) in order to think that the reconstructed argument from natural necessity rules out contingentism. So, it isn't that the argument, if valid, supports modal necessitarianism (as Schaffer would have it); it is that the argument, if valid, provides no independent support for any type of necessitarianism.³⁰

Schaffer suggests that, in order to address the arguments from our best theories concerning propositions and conceivability, the necessitarian must appeal to Kripke-style explanations of modal illusions such as its seeming possible that water might not have been H₂O (see Kripke 1980). He asserts that such a response (if successful) would rule out modal necessitarianism, since it requires postulating worlds with alien properties governed by alien laws superficially similar to those exemplified in the actual world. However, he goes on to argue that the Kripke-style response is unsuccessful given disanalogies between 'water is H₂O' and 'charge is governed by Coulomb's law' (see Schaffer 2005, 11–12). If Schaffer is correct that this sort of response fails, then there is no pressure to reject modal necessitarianism on this account. However, it is worth noting that the Kripke-style response does not obviously rule out modal necessitarianism. As we saw above, the modal necessitarian can happily acknowledge conceptually possible worlds involving alien properties governed by alien laws. So, there is no reason to think that the arguments from our best theories of propositions and conceivability pull the necessitarian in the direction of any particular one of the three necessitarian views.

Schaffer notes that 'it seems intuitively possible to have symmetric laws' (laws involving two or more properties in structurally indiscernible roles) and even 'symmetric structures that themselves indicate multiplicity' and argues that only causal necessitarianism is consistent with symmetric laws (Schaffer 2005, 12–13). However, it is not clear that there are no actual symmetric laws and, so, no reason to think that such laws are ruled out by modal necessitarianism. While symmetric laws will clearly not be among the NN worlds, the nomic necessitarian can nonetheless maintain that such worlds, while not metaphysically possible, are conceptually possible. Contra Schaffer, the conceptual (or even epistemic) possibility of symmetric laws is no threat to either modal or nomic necessitarianism.³¹

Finally, Schaffer argues that skeptical arguments against quiddistic contingentism require nomic necessitarianism (Schaffer 2005, 16–18). Such arguments trade on the assumption that we only have knowledge of properties via the role that they play in the Ramsified lawbook.³² So, if we are to have knowledge of properties, that can only be because the nomological role played fully determines the property (i.e. only if nomic necessitarianism is true). The argument continues that, since we do know what properties exist, properties cannot exchange nomological roles in different worlds – merely quiddistic differences are metaphysically impossible. Even if Schaffer is correct that nomic necessitarianism is required for the skeptical argument against quiddistic contingentism, it remains unclear why the necessitarian would be committed to making such an argument. The necessitarian (perhaps especially of the modal or causal variety, but plausibly also the nomic necessitarian) need not assert that we know what properties exist. There may well be existing properties so beyond our ken that they have no known nomological roles. There may be existing properties that govern multiple laws some of which correspond to known nomological roles and others that do not. While the skeptical argument against quiddistic contingentism may only be available to the nomic necessitarian, this is not all by itself a reason to favor nomic necessitarianism over modal or causal necessitarianism.

6. Conclusion

On closer examination, Schaffer provides no cogent reasons for thinking that necessitarianism is ultimately incoherent. Nor does he succeed at showing that our best theories of modality, counterfactuals, propositions, conceivability, or recombination are inconsistent with necessitarianism. While his quiddistic contingentism remains a viable competitor, I would submit that he offers no cogent reasons to prefer it to any of the versions of necessitarianism he examines.

Notes

1. Wilson (2013) utilizes both strategies in his response to Schaffer. For example, he denies that our best theory of conceivability requires postulating possible worlds in which what is conceived is true (664–665), while arguing that our best theory of modality only requires worlds countenanced by the (modal) necessitarian (659).
2. Schaffer (2005) goes on to say that, according to the modal necessitarian, e.g. ‘Coulomb’s law holds in every possible world’ (2). Wilson (2013) likewise defines modal necessitarianism as the view that ‘[t]he actual laws are the laws of all possible worlds’ (654). However, it seems to me that the modal necessitarian need only hold that the actual laws hold in all *metaphysically* possible worlds.
3. At first blush, anti-quiddistic contingentism would seem to rule out distinct worlds with quiddistic differences for the simple reason that any given property exists in only one world. However, a property that exists in a given world *w* can be represented as existing in a (putatively distinct) world *w** in virtue of the

fact that w^* contains a counterpart of that property. So, what then rules out the representation of distinct worlds with quiddistic differences? Suppose again that, in world w_1 , property p_1 has nomological role r_1 and property p_2 has nomological role r_2 . Suppose further that, in world w_2 (which is structurally identical to w_1), property p_3 has nomological role r_2 and property p_4 has nomological role r_1 . If we take p_3 to be the counterpart of p_1 and take p_4 to be the counterpart of p_2 , w_2 might appear to be a world that differs merely quiddistically from w_1 . However, we could just as easily take p_3 to be the counterpart of p_2 and take p_4 to be the counterpart of p_1 in which case w_2 represents a world identical with w_1 (indeed, it may be the case that $w_2 = w_1$). In short, on anti-quiddistic contingentism, if worlds x and y differ merely quiddistically, x and y represent all of the same worlds under distinct counterpart relations. (I am grateful to a reviewer for this journal for bringing this to my attention).

4. As noted above, Schaffer does not explicitly argue that the AC worlds include the MN, NN, and CN worlds. Indeed, any such argument would be implausible. So long as modal, nomic, and causal necessitarianism all allow for genuine cross-world identity of properties, each will countenance worlds not included among the AC worlds. Suppose that AC world w contains property p and that w is also, e.g. an MN world. If modal necessitarianism allows for genuine cross-world identity, there will be an MN world, call it w^* , that is distinct from w and that also contains p . Although there will be an AC world, call it w^{**} , that represents w^* by containing a counterpart of p , w^{**} (which does not contain p) is nonetheless a distinct world from w^* (which does contain p). So, while the MN world w^* can be represented by an AC world, it is not itself among the AC worlds. Secondly, Schaffer argues that there may be reasons to countenance worlds with symmetric laws (Schaffer 2005, 12). As such, it is epistemically possible that some actual laws would be symmetric, and thus, no reason to think that the MN worlds do not include worlds with symmetric laws and/or structures. So, if the MN worlds are a proper subset of the CN worlds, it is not merely because the CN worlds allow for symmetric laws.
5. It is interesting that Schaffer frames this argument solely as an argument against necessitarian views and offers a different sort of argument against anti-quiddistic contingentism. See Schaffer (2005), 13–16. It seems to me that, if the argument from worlds countenanced works at all, it works equally against anti-quiddistic contingentism.
6. Like Schaffer, Wilson (2013) seems to hold that, where our best theories do require appeal to worlds, those worlds must be metaphysically possible.
7. This point is made by Wilson (2013, 663).
8. On a common modal semantics, various types of modality are demarcated by placing restrictions on the accessibility relation that holds between a very broad set of worlds (call these the 'K worlds'). For example, one gets a deontic modality by allowing only models that include worlds for which at least one world is accessible and one gets a minimal alethic modality by allowing only models with worlds that stand in the accessibility relation to themselves. Among the K worlds, however, are worlds that stand in no accessibility relations (even to themselves). These are not deontically or alethically possible worlds. Although it is not inappropriate to speak of K-modality, K-modality does not capture any *prima facie* plausible notion of modality.
9. There is an increasingly large literature on the use of impossible world semantics for various theoretical purposes. See among others Nolan (1997, 2013), Vander

- Laan (1997, 2004), Handfield (2004), Kment (2006), and Brogaard and Salerno (2013).
10. Lewis (1986, 18–20) makes much of this fact, although he takes it to ultimately help motivate his modal realism.
 11. It is worth noting that this requires a rejection of Lewisian modal realism. On that view, all worlds are metaphysically possible worlds.
 12. Note that just as there will be some epistemically possible worlds that are not metaphysically possible, there will also be metaphysically possible worlds that are not epistemically possible because they are inconsistent with what we now know to be true.
 13. Schaffer has noted (personal communication, May 25, 2015), that this response to the Wilsonian concern seems to simply push the concern up a level. The Wilsonian asks why we should care about metaphysical modality if it a restricted modality. The answer I propose is that it is invoked by the very context of the debate between the necessitarian and the contingentist. But, why should we care about that debate? It seems to me that at least one reason we should care about the debate between the necessitarian and the contingentist is that it has implications for the correct theory of property individuation.
 14. Though to be sure, we may want to count, e.g. epistemic and/or conceptual modalities as capturing genuine species of possibility.
 15. On this analysis, if there is no world in which it is the case that φ , the counterfactual conditional will be trivially false. Sometimes counterfactuals are analyzed instead as follows: 'if it were the case that φ , it would be the case that ψ ' is true (in the world of evaluation) if and only if all suitably close worlds (by some measure of closeness) in which it is the case that φ are such that it is the case that ψ . On this analysis, if there is no (suitably close) world in which it is the case that φ , the counterfactual conditional will be trivially true. My remarks apply *mutatis mutandis* to this alternative analysis of counterfactuals.
 16. This is similar to an example used by Brogaard and Salerno (2013, 643).
 17. Additional conditionals that could plausibly be viewed as true counter-possibles by both the necessitarian and contingentist include: 'if there were a round-square Cupola on Berkeley's campus, there would be macroscopic objects' and 'if it were the case that a woman born in 1968 could give birth to a daughter in 1857, then there would be at least two female human beings'.
 18. Although the suggestion here was developed independently, Wilson (2014), drawing on the works of Nolan (1997), Kment (2006), Brogaard and Salerno (2013), offers the same sort of response to Schaffer's argument from our best semantics for counterfactuals. Handfield (2004) offers an approach to counter-legals that is in some ways similar. Handfield argues that counter-legal conditionals can be explained on the necessitarian view by distinguishing between metaphysical necessity and conceptual (or perhaps epistemic) necessity. As such, we can interpret the counter-legal conditional, 'If it had been the case that φ , it would have been the case that ψ ' (where φ violates the actual laws), as: 'If it turns out that φ is metaphysically possible, then had it been the case that φ , it would have been the case that ψ ' (410). In his use of 'if it turns out that φ ', he invokes a two-dimensional modal semantics that allows us to treat a conceptually possible world in which it is the case that φ as if it were actual and hence metaphysically possible. The idea is that Handfield's antecedent invites us to suppose that a world in which it is the case that φ is metaphysically possible (where this supposition is itself conceptually possible) and then evaluate the embedded counterfactual from that world. Although similar, the response offered here differs in a number

of respects: (i) although it also appeals to a type of modality that is broader than metaphysical modality, it does not require the reinterpretation of counterfactuals as more complex conditionals containing embedded counterfactuals and, (ii) while Handfield's analysis of counter-legals invokes a conceptual modality that is broader than metaphysical modality, it would still seem to be the case that the counterfactual embedded in the consequent of the larger conditional continues to be evaluated with respect to what we are supposing (given the antecedent of Handfield's conditional) to be the metaphysically possible worlds. Also worth noting is that Handfield suggests that counter-logicals, unlike counter-legals are rarely (if ever) *prima facie* true (403). So, presumably, he would see no motivation for a take on counterfactuals that can handle counter-logicals with non-trivial truth conditions.

19. A similar condition is suggested by Nolan (1997, 550).
20. A. Wilson accepts Schaffer's premise (11), but denies that our best theory of conceivability requires postulating possible worlds in which what is conceived is true. 'Whether it is conceivable that like charges attract depends on us, and on our conceptual apparatus. Whether the relation between properties and their powers is necessary depends not at all on us or on our conceptual apparatus, but on the properties and powers themselves' (Wilson 2013, 664). With respect to Schaffer's premise (8), Wilson notes that a necessitarian could either simply deny it or accept it and deny the 'coarse-grained sets-of-worlds' theory of propositions (ibid., 663–664). I argue that a necessitarian can accept both (8) and (11) without rejecting Schaffer's assumption that our best theories of propositional content and of conceivability will invoke worlds.
21. But see Yablo (1993) and Chalmers (2002) for notions of conceivability that preserve the connection between conceivability and metaphysical possibility by denying, e.g. that both Goldbach's conjecture and its negation are conceivable. Yablo holds that, while both Goldbach's conjecture and its negation are believable, neither is strictly speaking conceivable (Yablo 1993, 11). As Chalmers would have it, at least one of Goldbach's conjecture or its negation fails to be ideally positively conceivable despite being *prima facie* negatively conceivable and perhaps *prima facie* positively conceivable. While Chalmers takes ideal positive conceivability to entail metaphysical possibility (Chalmers 2002, 171), he holds that *prima facie* inconceivability is an imperfect guide to metaphysical possibility (Chalmers 2002, 159).
22. It should be noted that immediately after asserting that the conceivability of *p* entails the existence of a possible world in which *p* is true, Schaffer adds the parenthetical remark: 'or at least there is *prima facie* evidence for such a world' (Schaffer 2005, 9). Further, in footnote 14, he suggests that the best response to purported counterexamples to the claim that conceivability entails possibility (such as the one involving Goldbach's conjecture and its negation and other counterexamples involving negations of necessary truths known a posteriori) may be to 'restrict conceivability as a guide to metaphysical possibility rather than reject it outright' (Schaffer 2005, 26). An anonymous reviewer for this journal has suggested that Schaffer (2005) intends to endorse only a restricted connection between conceivability and possibility. If that is the case, then our best unrestricted theory of conceivability may well need to invoke metaphysically impossible worlds even by Schaffer's own lights. However, once we invoke conceptually possible but metaphysically impossible worlds, there is no longer any reason to suppose that, e.g. the conceptually possible world in which like charges attract is among the metaphysically possible worlds. Moreover, once

we acknowledge that some conceivable states of affairs involve metaphysically impossible worlds, we can no longer be confident that a proposition asserting that a state of affairs obtains is simply a set of metaphysically possible worlds. Interestingly, in a later work (Schaffer 2010, 61), Schaffer explicitly denies that conceivability entails metaphysical possibility (though he thinks that inconceivability entails metaphysical impossibility). While there might be some way of reconciling this assertion with his earlier writings on the subject, Schaffer has acknowledged (personal communication, May 23, 2015) that this does reflect a change in his thinking. Originally, Schaffer held that metaphysical possibility was the widest sense of possibility. He has since been convinced that metaphysical possibility is a restricted modality with conceptual possibility being a wider sense of possibility.

23. I am thankful to a reviewer for this journal who noted that, if we sever the connection between conceivability and metaphysical possibility, then it is unclear how we could have any epistemic access to metaphysical modality. Indeed, this seems to be Schaffer's reason for preferring to restrict conceivability as a guide to metaphysical possibility to propositions that are neither negations of necessary truths known a posteriori nor negations of necessary truths that are too complex for human knowledge instead of rejecting the connection between conceivability and metaphysical possibility altogether (see Schaffer 2005, 26, footnote 14). The reviewer further notes that the necessitarian would be unwise to embrace modal skepticism given that the necessitarian does take us to have knowledge of some metaphysically necessary truths. While an adequate discussion of modal skepticism is well beyond the scope of this paper, I do want to provide a few comments on the topic. First, in at least some cases, we can have a posteriori knowledge of metaphysical necessities (such as the identity of water and H₂O). Second, we may be able to discover an implicit logical inconsistency or conceptual incoherence in a given thesis thereby showing it to be metaphysically impossible. Note that, even after abandoning a connection (restricted or otherwise) between conceivability and metaphysical possibility, Schaffer continues to hold that inconceivability entails metaphysical impossibility (2010, 61). For this to be at all plausible, he must take inconceivability to involve something like inconsistency or conceptual incoherence. Third, it isn't just the necessitarian who embraces impossible world semantics for various purposes who has a vested interest in accounting for our knowledge of metaphysical necessities. Even a proponent of contingentism may acknowledge the need to appeal to metaphysically impossible worlds in our best theories of counterfactuals, conceivability, etc. but nonetheless be committed to our knowledge of some metaphysical necessities. Schaffer himself remains committed to our knowledge of metaphysical necessities (such as the direction of grounding relations) while countenancing metaphysically impossible but conceptually possible worlds (Schaffer 2010, 45).
24. In any case, (13) is largely irrelevant given that (15) would seem to follow directly from (14) if we take charge and acceleration to be arbitrary or typical examples of properties.
25. It has been suggested by an anonymous reviewer for this journal that we need not take the antecedent of the recombination principle to involve an implicit modality, since we can appeal to mereological relations between *instances* of the properties in articulating the notion of distinct existences as follows: *x* and *y* are distinct existences if and only if they do not overlap (do not share any parts). The recombination principle will then be understood along Lewisian lines to allow any recombination of any number of duplicates of distinct existences

(see Lewis 1986, 88–89). The idea is this: since they do not overlap, any two negatively charged particles are distinct existences. In the actual world, two negatively charged particles will repel each other. However, since they are distinct existences, an appeal to the principle of recombination ensures that there is a world in which duplicates of any two negatively particles attract one another, thereby violating Coulomb's law. Perhaps a non-modal reading of the notion of distinct existences that would serve Schaffer's purposes can be developed along these lines. However, I confess that I begin to lose my handle on the very notion of a duplicate when properties are divorced from their nomological roles. It seems to me more than a little absurd to suppose that, e.g. a duplicate of a lemon could appear red and taste sweet to a duplicate of me in conditions that duplicate standard perceptual conditions in the actual world.

In addition to the mereological notion of distinct existences, Wilson (2010) identifies another non-modal interpretation: 'Spatiotemporal distinctness: Entities are distinct just in case they do not spatiotemporally overlap' (Wilson 2010, 605). She notes that this notion is inadequate to capture distinctness relations between various types of entities (such as sets and their members). It seems to me to be equally inadequate when applied to properties. If one takes a property to be an abstract universal and thus not spatiotemporally located, any two properties will count as wholly distinct. But it is highly implausible that there could be a world that contained the property of being a dog without containing the property of being a mammal. Alternatively, we may take properties to occupy the spatiotemporal locations of their instances. But then we get the implausible result that being square and being green are not wholly distinct properties provided that there is at least one green square.

26. Properties *x* and *y* may be said to be conceptually distinct if and only if we can conceive of one without (taking ourselves to be) conceiving of the other. Properties *x* and *y* may be said to be epistemically distinct if there is something that we know about one but do not (take ourselves) to know about the other.
27. This is the first necessitarian solution suggested by Wilson (2013, 665–666). Wilson also asserts that the necessitarian can 'abandon recombination all together, and [...] give an alternative characterization of modal space' (Wilson 2013, 666). I agree with Wilson that this second strategy is a good way for the necessitarian to proceed with respect to *metaphysical* modal space. However, it seems to me that the necessitarian can maintain that conceptual modality is to be analyzed in terms of recombination of conceptually distinct entities.
28. Schaffer anticipates a different response that the argument from recombination begs the question by presupposing contingentism in (14). Schaffer rejects this response, noting that, if cause and effect cannot be distinct existences, then neither can correlates of a common cause. But if the whole universe is a causal correlate of the Big Bang, then no actual existence is causally distinct from any other actual existence. The principle of recombination will be true with respect to actual existences merely because there will be no two distinct actual existences *x* and *y*. Even so, it remains the case that there will be no recombinations to actual objects. Schaffer concludes that '[t]his response preserves the letter of recombination, but dashes its spirit' (Schaffer 2005, 12). Wilson (2013, 665–666) suggests that the necessitarian can save the spirit of recombination by either asserting that all laws are indeterministic or by holding that the initial conditions of the universe are contingent. Both Schaffer's concern and Wilson's response seem to presuppose that the modality operative in the principle of recombination would be metaphysical modality. As is argued here, this need not be the case. The

necessitarian is free to acknowledge that charges and accelerations, while not distinct existences relative to metaphysical modality, are conceptually distinct. As such, recombinations of actual existences are conceptually possible.

29. I am less sympathetic to his reasons for thinking that, if valid, the argument from sustaining counterfactuals can be used to 'formulate a direct argument against nomic and causal necessitarianism' (Schaffer 2005, 7). He asks us to suppose that 'there is a world w at which Coulomb's law does not hold.' He asserts that both the nomic and causal necessitarian will judge the counterfactual 'if there were like charges here, they would repel' to be true *at w*. He then argues that, given the assumption that laws of nature sustain counterfactuals, the laws at w must sustain this true counterfactual. So, contrary to our hypothesis, w is a world in which Coulomb's law holds. But is that right? First of all, it is important to note that there is an ambiguity in the counterfactual considered by Schaffer. If by 'here' Schaffer means the world relative to which we are evaluating the counterfactual (i.e. world w), the conditional is false. There is no world closer to w than w itself. There are like charges in w and, in w , they do not repel. So, in the world closest to w in which there are like charges, they do not repel. If by 'here' Schaffer means the actual world, α , then, the counterfactual should probably be restated as 'if there were like charges in α , they would repel in α '. To be sure, that conditional will be true as evaluated relative to w (or any world for that matter). However, that has no obvious implications for what laws can hold at w . In any case, it is one thing to say that every law will sustain (at least one) true counterfactual. It is another thing entirely to say that, for every true counterfactual, there must be a law that sustains it.
30. Wilson (2013) responds to Schaffer's criticism of the original version of the argument by providing what he takes to be reason to think that the 'must' in (2) is completely unrestricted. His reason can be summarized as follows: if natural or physical necessity is a restricted necessity, then we require an explanation of why we care about that type of necessity. Such an explanation is not easily forthcoming. A simpler and more readily available explanation would be that there are no worlds of any sort in which natural laws fail to hold. (See Wilson 2013, 657). However, it seems that much (if not all) of what Wilson wants to say about why we care about natural necessity would apply if one maintained that natural laws hold in all *metaphysically* possible worlds even while acknowledging that there might be conceptually possible worlds in which they do not. So, perhaps there is a cogent argument for necessitarianism in the vicinity. However, it doesn't appear to be the argument from natural necessity so much as it is the argument that necessitarianism best explains why we care about natural necessity.
31. Though of course the actuality or genuine metaphysical possibility of symmetric laws will be inconsistent with nomic necessitarianism.
32. David Lewis, himself a quiddistic contingentist, provides a detailed defense of this assumption in Lewis (2009), 203–222. Although he agrees that quiddistic contingentism entails that we cannot know what properties exist, he suggests that this skepticism is in no way ominous.

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