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The Possibility Bias is not Justified

ABSTRACT: *Necessity, but not possibility, is typically thought to be rare and suspicion-worthy. This manifests in an asymmetry in the burden of proof incurred by modal claims. In general, claims to the effect that some proposition is impossible/necessary require significant argumentative support and, in general, claims to the effect that some proposition is possible/contingent are thought to be justified freely or by default. Call this* the possibility bias. *In this article, I argue that the possibility bias is not epistemically justified. We should regard possibility with at least as much suspicion, that is to say as incurring at least as much of an explanatory demand, as necessity. In fact, I suggest that we might even be justified in reversing the burden of proof asymmetry and adopting a necessity bias. This has quite radical implications for philosophical methodology and hence for many first-order philosophical concerns.*

KEYWORDS: Justification, Metaphilosophy, Modality, Necessity, Possibility

1. Introduction

It is an entrenched part of contemporary philosophical lore that possibility[1] is cheap and bountiful whereas necessity is expensive and scarce.[2] If any propositions are necessary, they must be members of some elite class. Propositions of mathematics and logic may qualify (though some doubt even this, for example, Wittgenstein as interpreted by Dummett (1959), Putnam (1969), Mortensen (1989), Nozick (2001)). At the very least, necessity is believed to require explanation, and many recent authors have assumed that any theory that implies the existence of brute necessity is to be rejected on that basis (see Van Cleve 2018 for discussion). Perhaps we have been convinced by Putnam (1975) and Kripke (1980) to admit necessities concerning theoretical identities and the constitution and origin of individuals. But the induction of these *a posteriori* necessities into the mainstream philosophical psyche was hard fought and continues to face stiff opposition (see, e.g., Sidelle 1989; Chalmers 1996; Jackson 1998; Chalmers and Jackson 2001; Nozick 2001; Priest 2018). Necessity, unlike possibility, is to be viewed with extreme suspicion, or so philosophical orthodoxy would have it.

Sidelle, for example, finds it "hard to believe that there are people who do not find the notion of real necessity either incomprehensible or at least extremely troublesome" (Sidelle 1989, 85). Similarly, Nozick maintains "that there are no interesting and important metaphysical necessities" (Nozick 2001, 120–21). Merricks suggests

[1] Here and throughout, I use 'possibility' as short for 'mere possibility' i.e., possibility that is not actual.

[2] In this article I am concerned with alethic modality. What more might be said to characterize the notion at issue is contentious (see sect 2.1 for details), but I hope it can be sufficiently gestured at just in the course of the discussion.

"that we ought to assume, for any distinct and contingent states of affairs S and S*, either that S can obtain in some possible world where S* does not obtain or vice versa, unless there is *some* reason to think otherwise" (Merricks 1998, 117–18). Fine thinks that to deny the possibility of *alien* properties would be "too outlandish to deserve consideration" (Fine 2002). Sider thinks that "it is intuitively plausible that any pattern of occupation of spacetime points is possible" (Sider 2005, 189). According to Rosen, "[M]etaphysical possibility is, as it were, the default status for propositions" (Rosen 2006, 23). And Wilson has, without endorsing it, drawn attention to this *bias* in favour of possibility/contingency over necessity: "The general thought, not often articulated, seems to be that contingency is the 'default' modal status for a proposition and that the job of a theory of modality is to provide an account of necessity as deviation from this default status" (Wilson 2020, 13).

This orthodox suspicion of necessity and penchant for possibility leads to belief in a stark asymmetry in the burden of proof incurred by modal assertions. Claims to the effect that some proposition is *necessary* are generally thought to incur significant argumentative *cost* as evidenced by, for example, the lengths to which Kripke and Putnam had to go to persuade philosophers that it is necessary that water is H_2O and that tigers are mammals. On the other hand, philosophers have considered themselves free to assert all manner of possibilities very cheaply, that is, with little to no argumentative support. Very peculiar possibilities indeed are often invoked as unargued for (or very minimally argued for) premises in arguments to surprising conclusions. Examples include Plantinga's (1974) argument from the possibility of a perfect being to the actual existence of God, Sider's (1993) argument from the possibility of "gunk" (matter that is infinitely divisible) against mereological nihilism, Chalmers's (1996) argument from the possibility of phenomenal "zombies" against physicalism, and Fine's (2002) argument from the possibility of alien properties for the independence of natural and metaphysical modality.

Call this suspicion of necessity, penchant for possibility, and the resulting asymmetry in the burden of proof incurred by assertions of possibility and necessity the *possibility bias*:

The possibility bias: Necessity, but not possibility, is to be treated with suspicion. In general, asserting that some proposition is impossible/necessary is expensive in the sense that it incurs a heavy burden of proof. In general, asserting that some proposition is merely possible/contingent is cheap in the sense that doing so incurs little to no burden of proof.

One might thus think of the possibility bias as a metaphilosophical *norm*: when doing philosophy, one *ought not* to assert that some proposition is necessary without sufficient argumentative support, and one *may* assert that some proposition is merely possible/contingent with little to no argumentative support.

I take the aforementioned authors to endorse the possibility bias, or something like it. There are, of course, exceptions. Patricia Churchland, for example, objects

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to the zombie argument: "That someone can *imagine* the possibility [of zombies] is not *evidence* for the real possibility" (1996, 403). The implication is that possibility claims are not sufficiently epistemically justified by citations of what one can imagine; i.e., that real possibilities do not come so cheaply as two-a-penny imaginings. More generally, and particularly since van Inwagen's "Modal Epistemology" (1998), philosophers have increasingly raised doubts about the premises of such "possibility arguments". Furthermore, the possibility bias may not hold sway over all domains of inquiry, mathematics being a case in point: it might be harder to establish the consistency of standard mathematics than it is to establish what follows *necessarily* from certain axioms. The latter is computationally tractable, but there is no test for *consistency* that can be implemented by a computer and, as per Gödel's 2nd theorem, mathematics could only "prove" its consistency if it were inconsistent.[3]

To be clear, then, the target of my argument is those philosophers labouring under the possibility bias, which I take to be a significant subset of philosophers as evidenced by the above. (If necessity comes cheaper than consistency, *viz.* possibility, *in mathematics*, then I am happy to bracket that domain.) My aim in this article is to argue that belief in the possibility bias, which to recap, says that *in general, necessity claims incur a heavier burden of proof than do possibility claims*, is not epistemically justified. We've no reason to believe anything that might vindicate this bias such as that, for example, mere possibilities are more plentiful or more frequently encountered than necessities, or that mere possibilities are more ontologically innocent than necessities.

My strategy involves examining some of the most likely ways of justifying the possibility bias and finding them all wanting.[4] I recognise that even if I am successful here this success will not constitute a closed case because there could be some other route to justification of the bias that I have not discussed. But if there are other justifications, then we should hear them. Indeed, I think the philosophical community is *owed* such a justification given what's at stake for areas of philosophy that tend to appeal to possibilities in their investigations. Accordingly, this article should be seen as starting a debate about the relative justificatory burdens incurred by our modal assertions and the corresponding metaphilosophical implications.

2. Humean Naturalism

The "[great] denier of necessary connections" (Lewis 1986b, ix) was David Hume. Humean naturalism, which for present purposes I will assume comprises an empiricist epistemology and a physicalist ontology, is an attractive guard against

[3] Many thanks indeed to a reviewer for raising this interesting case.

[4] Heil (2015) is a stand-out in rejecting the possibility bias as I am understanding it here, i.e., in an epistemological-*cum*-metaphilosophical sense. Wilson (2020), though similar, is primarily concerned with arguing the first-order *metaphysical* point that possibility and not necessity is the primary explanatory target of a metaphysics of modality, which falls out of his own preferred *Quantum Modal Realism*. My work here can be understood as adding meat to the bones of Heil's idea by scrutinizing and ultimately rejecting prominent routes to a justification of the bias.

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straying into the overly *metaphysical*, in the pejorative sense of "metaphysical" where one might find books on spirits and astral projection in the "metaphysics" sections of certain bookshops, and promises to keep philosophy appropriately tethered to science. The influence of naturalism so conceived from Hume and Kant, through the Logical Positivists and contemporary philosophers, is hard to overstate. So, it is worth first examining whether naturalism yields a route to justification of the possibility bias.

The point is not to reject Humean naturalism. Rather, I concede that there is something attractive *in general* about the (what one might *call* broadly "Humean naturalistic") constraints imposed on philosophical theorizing by empiricism and physicalism. The aim of this section, then, is to argue that the possibility bias cannot be justified by appeal to this independently attractive approach to philosophy. I will proceed by first showing how two broad claims about *modality* typically associated with the *name* "Humean" may justify the bias, before then considering if either of these can really be justified on laudable empiricist/physicalist grounds.

The Humean approach to modality comprises both a negative claim and a positive claim. According to the negative claim, worldly necessity, i.e., necessity for (or necessary connections between) concrete things *in the world*, as opposed to between our concepts/ideas, is obscure, i.e., mysterious or spooky, or otherwise unrespectable in some sense. According to the positive claim, imaginability entails possibility. Regarding the negative claim, if worldly necessity were indeed obscure, perhaps we would want to say that there is no necessity in the world and, hence, that possibility reigns supreme, which would justify the possibility bias. Regarding the positive claim, *imagination* is relatively unconstrained, so, if imaginability did entail possibility, possibility would be relatively unconstrained too, which would justify the possibility bias.

The Humean rejection of necessity and accompanying acceptance of possibility has been endorsed widely, particularly by those of a naturalist/empiricist persuasion, such as Ayer:

> Like Hume, I divide all genuine propositions into two classes: those which, in his terminology, concern "relations of ideas," and those which concern "matters of fact." The former class [. . .] I allow to be necessary and certain only because they are analytic. That is, I maintain that the reason why these propositions cannot be confuted in experience is that they do not make any assertion about the empirical world. (Ayer 1936, 31)

And Quine:

> In principle, therefore, I see no higher or more austere necessity than natural necessity; and in natural necessity, or our attributions of it, I see only Hume's regularities. (Quine 1966, 76)

But the Humean influence reaches well beyond the austere empiricism of the early-to-mid-20th century to the more indulgent, *realist*, metaphysics of David

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Lewis and David Armstrong, each of whom nonetheless thinks of himself as operating within the confines of naturalism. Lewis and Armstrong both endorse a principle of *recombination*. And Lewis, at least, is explicit that this principle is motivated by "the Humean denial of necessary connections" (Lewis 1986b, 87):

> [P]atching together parts of different possible worlds yields another possible world. Roughly speaking, the principle is that anything can coexist with anything else [. . .] Likewise, anything can fail to coexist with anything else (Lewis 1986a, 87–88)

> The idea for possibility, then, is that all the combinations of simple particulars, properties and relations [. . .] constitute the possibilities for first-order states of affairs. (Armstrong 1997, 160)

Clearly, these philosophers are under the influence of the possibility bias. The question, however, is: can the attractive package comprising empiricism and physicalism, justify either the claim that necessity is obscure and possibility reigns supreme or the claim that imaginability entails possibility, and *thereby* confer justification on the possibility bias?

Consider first the claim that worldly necessity is "obscure and uncertain" and hence that we should not admit its existence.[5] Why might the Humean naturalist think that worldly necessity is obscure? Answer: because we cannot empirically *observe* necessity in the world, only constant conjunctions of events. According to the empiricist component of Humean naturalism, all knowledge of the world comes from the senses, but since we can have no sensory experience of necessary connections, we can have no knowledge of such things. We may project the idea of necessary connection from our own minds onto the constant conjunctions that we do observe, but that is not to say that the necessity is really there in the world. The idea that necessary connections should thus be positively *banished* arguably stems from the physicalist component of Humean naturalism: if necessary connections are not the sorts of things that can be detected by respectable empirical/scientific means, i.e. detected *causally*, we should not posit them as part of the furniture of the world (that's not to say that this is *Hume's* view, see, e.g., Strawson (2015)). Quine sums up this typical interpretation of Hume:

> The doctrine that necessity is no more than regularity was expounded by David Hume [. . .]. His, indeed, was the battle cry. "There are no necessary connections in matters of fact." (Quine 1966, 71)

However, the idea that necessity is more obscure than possibility is not justified by naturalistic scruples. We can grant that we have no empirical access to necessary connections in the world and that this motivates skepticism about worldly

[5] "[T]here are no ideas, which occur in metaphysics, more obscure and uncertain [than necessary connections]" (Hume, EHU 7.1.3/61–62); [N]or is it possible for us ever to form the most distant idea of [necessity], consider'd as a quality in bodies. (T 1.3.14.24)

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necessity. But empiricism should make us just as skeptical about real, worldly, mere possibility as it does about necessity. Assume that we in fact observe one billiard ball hitting a second and the second ball moving in a straight line away from the first after the collision. We can no more observe the possibility that the second ball did (e.g.) a loop-the-loop in mid-air after the collision (or any other merely possible post-collision effect), and so acquire knowledge that this really is a possibility, than we can observe a necessary connection between the collision and the second ball's actual movement. The letter of Humean empiricism renders belief in mere possibilities no more justified than belief in necessary connections.

Next consider the claim that what we can imagine is possible.[6] This is an idea taken up enthusiastically by many contemporary philosophers, as evidenced by the diversity of arguments from possibility above. Sidelle is explicit on this point: "the supposition that what is imaginable is possible is so fundamental to philosophical discussion" (Sidelle 1989, 87). One might then argue as follows. Imaginability is relatively unconstrained. Imaginability entails possibility, which renders possibility unconstrained, too. Hence, the possibility bias is justified.

But now we can ask: can the claim that imaginability entails possibility be justified on naturalistic grounds? Ayer hints at a positive answer in the above, suggesting that only those propositions that could not possibly be confuted *in experience* are necessary, and all other propositions that could possibly be confuted in experience are contingent.

How do we know whether a proposition could possibly be confuted in experience and thus whether it is contingent? According to Hume:

> The contrary of every matter of fact is still possible; because it can never imply a contradiction, and *is conceived by the mind* with the same facility and distinctness, *as if ever so conformable to reality*. (Enquiry 4.3, SBN 26, my emphasis)

The idea being that if the negation of a proposition can be imagined, or *conceived* (I won't distinguish between these terms), without contradiction, then the negation of that proposition *may* conform, or is "*conformable*" to reality, which makes the proposition contingent, i.e., possibly false.

But to merely imagine the negation of a proposition "conforming to reality" is not to have some *empirical* evidence that it is possibly false. The reasoning here says, for some true proposition, P: "I can imagine P being false because I can imagine a situation in which my experience confutes P" and "if I can imagine P being false in this way, then it is possible that P is false". None of this says anything about actual empirical evidence telling in favour of a true proposition's being possibly false or a false proposition's being possibly true. For any true proposition, P, that is never actually confuted in experience, we have no *empirical* grounds for maintaining that P is possibly false, just a purported link between our being able to imagine P being confuted in experience and the possibility that P is false. Empiricism does not justify the claim that imaginability entails possibility.

[6] "To form a clear idea of any thing, is an undeniable argument for its possibility" (Hume, *T* 1.3.6.5)

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Perhaps it will be objected that the type of possibility entailed by imaginability is conceptual rather than worldly and that my argument above does not threaten the entailment from imaginability to conceptual possibility. Fine. But this would not justify the possibility bias which I take to apply to real, worldly, possibilities—when philosophers assert that zombies, schmass, or perfect beings are possible they mean that there really is a way the world could be such that these possibilities obtained, not just that they engender no conceptual confusion or inconsistency. If the possibilities were merely conceptual, possibility arguments would not support the realist conclusions of their proponents, such as that the mental and the physical are distinct, that there are distinct varieties of modality or that God exists.

To summarize: We have no more empirical access to mere possibilities than we do to necessary connections and the imaginability-possibility link cannot be justified on empiricist grounds.[7] So, naturalism (empiricism plus physicalism, for present purposes) tells just as much in favour of skepticism about possibility as it tells in favour of skepticism about necessity. The possibility bias cannot be justified on Humean naturalistic grounds. Importantly, I am willing to grant that naturalism is an independently attractive constraint on philosophizing, so this section isn't best understood as *merely* a response to the Humean naturalists. The quite general point here is that *there is* an independently attractive approach to philosophy (empiricism plus physicalism) but this *cannot* be successfully used (regardless of whether we would call ourselves "Humean" in doing so) in defence of the possibility bias.

2.1. More on Imaginability and Possibility

I'll now defend my assumption that imaginability does not entail real possibility. Recently, Justin Clarke-Doane (2019; 2021) has advanced an ingenious argument against the idea that *metaphysical* necessity is absolute or otherwise uniquely metaphysically significant. The core of the argument is that the "grounds on which we judge that paradigmatic metaphysical possibilities are possible in some *real sense*" (Clarke Doane 2019, 279, my emphasis) may equally serve to ground judgements such as '*it is possible that you had different parents*' or '*it is possible that water was XYZ*'. But these examples are paradigm metaphysical *impossibilities*.

The implication, then, is that where we draw the line between "real" possibility and "non-real" possibility or between possibility and impossibility is just a contingency of natural language semantics. If this were the case, I could not rest my argument on the idea that imaginability does not entail real possibility.

However, as Clarke-Doane himself notes, his argument assumed that "the grounds on which we judge that paradigmatic metaphysical possibilities are possible in some real sense" are good grounds, which is "an assumption that one could conceivably deny" (2019, 279). Now the grounds offered (Clarke-Doane 2019, sec. 2) are all in the service of justifying *paradigmatic judgements of*

[7] Furthermore, Berto and Schoonen (2018) argue that *cognitive psychology* casts serious doubt on the Humean idea that conceivability entails possibility in the relevant sense because the most plausible accounts of *conceiving* do not rule out our being able to conceive the impossible.

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metaphysical possibility. They are accounts of the epistemology of modality crafted in order to make our paradigmatic judgements of possibility turn out to be justified. The whole point of this article, however, is to call into question the justificatory status of paradigmatic judgements of possibility. In the current context, for any ground on which we judge that paradigmatic metaphysical possibilities are possible to be a *good* ground, it must be good for some reason that is *independent* of its ability to render our paradigmatic judgements of possibility justified, since my contention is that the latter are symptomatic of the possibility *bias*. This was my point regarding the conceivability-possibility link (which in fact is the first *ground* canvassed by Clarke-Doane): we are yet to see what might motivate this ground *independently* of its ability to render paradigmatic judgements of possibility justified, that is to say, *independently* of the sway of the possibility bias.

In short, my view is that Clarke-Doane's argument would need to demonstrate that "the grounds on which we judge that paradigmatic metaphysical possibilities are possible in some real sense" (2019, 279) are good grounds in a way that does not simply assume the possibility bias.

Clarke-Doane takes a deflationary moral from his argument (2019, sec. 7). But in arguing against Clarke-Doane—that we cannot justifiably believe that imaginability is a guide to real possibility—I'm not thereby advocating anything more "inflationary" about, say, the existence of a single privileged kind of real possibility. (There may not even be any real possibility because everything is necessary!). We should suspend judgement on the imaginability-possibility link until it can be justified in a way that does not assume the veracity of "paradigmatic judgements of possibility" since the latter I take to be symptomatic of the (itself unjustified) possibility bias.

3. Reductive Theories of Modality

Reductive theories of modality seek to analyse the modal in non-modal terms. This project is motivated by concerns similar to those already touched on: modality (necessity in particular) strikes many philosophers as mysterious. And if modality is mysterious, it is a mystery how we can come to have modal knowledge, so, it would be good if we could reduce modality to something more familiar, to which our epistemic access is uncontroversial.

Lewisian modal realism is a paradigm attempt at a reductive theory of modality, it reduces possibility and necessity to quantification over other concrete (but spatiotemporally isolated) worlds just like ours. This purports to render modality unmysterious because it is just a matter of quantification over additional familiar things like the actual world that we inhabit. Granted, Lewisian modal realism has raised notorious epistemological problems. Accordingly, other philosophers have sought to reduce modality to quantification over worlds not understood as concrete like our world but as abstract entities (e.g., Plantinga 1974; Adams 1974; Stalnaker 1976). The problem with these views is that they fail to be properly reductive because unanalysed modality remains in the definitions they give of abstract possible worlds (e.g., if worlds are maximal sets of *consistent* propositions "consistency" enters as residual unanalysed modality). This is a

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point that Lewis (1986a) raised forcefully against "linguistic" or "ersatz" possible worlds and used to motivate his modal realism. Lewis, pushing the Humean spirit to the extreme, was particularly concerned that modality was to be fully reduced to something else (at all costs!).[8]

The relevance of this is that reductionist proponents of abstract possible worlds have sought to avoid circularity worries, whereby modality reappears in the definition of a world, by giving a *combinatorial* definition of a possible world. On one such view, possible worlds are identified with sets of space-time points, with each set representing the possibility that its space-time points are occupied by matter (e.g., Heller 1998). As Sider puts it: "the multiplicity of worlds results from the combinatorial nature of set theory: for any combination of space-time points there exists a set containing all and only those points [. . .] Modality is not needed to rule out impossible representations of worlds because *it is intuitively plausible that any pattern of occupation of space-time points is possible*" (Sider 2005, 189, my emphasis). In a similar vein, Armstrong maintains that: "The idea for possibility [. . .] is that all the combinations of simple particulars, properties and relations [. . .] constitute the possibilities for first-order states of affairs. Notice that I am not saying 'all the possible combinations', which would be trivial, but 'all the combinations'. *The hypothesis is that these combinations are all of them possibilities*" (Armstrong 1997, 160, my emphasis).

So, perhaps one could justify the possibility bias on the grounds of wanting to provide a reductive (but not Lewisian modal realist) account of modality in terms of possible worlds, according to which every combination of space-time points (or particulars and properties) represents a possible way the world could be. On such a picture, possibility would reign supreme. The problem is that while this strategy may eliminate modality from the definition of a possible world, modality reappears in the definition of 'true in' a possible world (Lewis 1986a, 150–57; Sider 2005, 189–90). So, letting possibility run free and completely unconstrained (as per the possibility bias) cannot be justified on the grounds that it helps yield a reduction of modality to abstract possible worlds because the reduction ultimately fails. But more simply, the possibility bias appears to be assumed prior to the construction of these views; their starting assumption is that possibility is plentitudinous. As Sider insists: "it is intuitively plausible that any pattern of occupation of space-time points is possible" (2005, 189). They then seek to *capture* this assumption in non-modal, combinatorial terms. So, this type of reductionism about modality cannot independently justify the possibility bias.

Reconsider the Lewisian reduction of modality. Perhaps Lewis requires a plenitude of possible worlds in order for his modal realism to be able to do all of its assigned theoretical work (Lewis 1986a, 5–69). In this case, one might use Lewisian modal realism (LMR) to justify the possibility bias: LMR is justified, LMR implies a plenitude of possibilities, therefore the possibility bias is justified. The problem with this is that LMR remains deeply implausible to many, and so probably *is not* itself justified to the extent that would be required in order for it

[8] Work on *advanced modalizing* suggests that even Lewisian modal realism is left with residual unanalysed modality (e.g., Parsons 2012; Jago 2016; Marshall 2016).

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to confer justification on the possibility bias (and LMR may not even be fully reductive, in which case a large part of its motivation would disappear). Furthermore, to do the theoretical work of accounting for *modality*, Lewisian worlds need only be as plentitudinous as we antecedently think possibilities themselves are. If we are working with the possibility bias in mind, then of course we will think that possibilities/possible worlds will be plentitudinous. But if we reject the bias, then we must suspend judgement on how plentitudinous the Lewisian worlds must be in order to do the work of accounting for modality. So, LMR's prospects in accounting for modality cannot provide independent justification for the possibility bias.

In general: an account of modality cannot justify the possibility bias if it is crafted with the possibility bias in mind. Rather, for an account of modality to be able to confer justification on the possibility bias, justification of the possibility bias must follow *independently* from it.

4. Nozick's Evolutionary Argument

Nozick thinks that the typical method for evaluating whether a proposition is necessary consists in trying to imagine counterexamples to it, that is, situations in which it would be false. If we are presented with some proposition, P, such that we can imagine no situation in which it would be false (perhaps P = "2 + 2 = 4"), then we deem P necessary. Nozick's concern is that while we are good at imagining alternative situations, we are not perfect at doing so. So, a failure to imagine a situation in which P is false does not constitute a good reason to believe that P is necessary, according to Nozick, because there may be some situations that would confute P but which we just can't imagine due to our own intellectual limitations (Euclidean geometry, after all, turned out not to be true of our universe even though it was taken by many to be self-evident and thus necessary).

Nozick argues that it is implausible that evolution would instil in us a faculty for assessing *all* possible worlds: "Since our ancestors evolved in the actual world, there were no selective pressures to reward accuracy about all possible worlds, and there was no handicap to being right only at the actual world [. . .] We therefore should be wary of concluding that a statement *S* is necessarily true, simply because we and others have been unable to generate counterexamples to it" (Nozick 2001, 122). What's more, Nozick suggests that there may have been some selective pressure to find certain true propositions to be self-evident and hence the sorts of things to which we could not imagine any counterexample. But if the self-evidence of a proposition may be given an evolutionary explanation, there is no need to explain self-evidence in terms *necessity* (Nozick 2001, 125).

Does this "evolutionary argument" yield a justification for the possibility bias? No. Nozick's claim is just that we shouldn't trust our intuitions or imaginative capacities as a guide to how far possibility extends because selective pressures are unlikely to have ensured that our imaginative capacities reliably track the possibilities. But one cannot infer from this that possibility is in fact abundant and hence that we are by default justified in asserting possibilities, whatever they may be. The real lesson to be learnt here seems to be that we must suspend judgement

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on, or at least take a thoroughly fallibilist attitude to beliefs about, how far the possibilities extend because "there were no selective pressures to reward accuracy about all possible worlds, and there was no handicap to being right only at the actual world" (2001, 125). As with Humean empiricism, the rationale cuts both ways: it is just as hard to see what justifies beliefs about what *could* be the case as it is to see what justifies beliefs about what *must* be the case.

5. Possibility is Logically Weaker than Necessity

One might argue that the relative logical strength of possibility and necessity makes possibilities "easier to know" than necessities (Nozick 2001, 121). How so? Well, since "P" implies "possibly P" but "P" does *not* imply "necessarily P", to know "possibly P" it suffices to know "P" but knowing "P" is insufficient for knowing "necessarily P". Alternatively: evidence of what is actually the case may be adduced in support of possibility claims but not necessity claims. This, one might maintain, is what justifies the possibility bias.

The problem is that this observation is irrelevant to typical philosophical debates in which what is at stake is *not* whether some proposition, P, is possible or necessary. Rather, we are typically concerned with whether some true proposition is contingent or necessary (or whether some false proposition is possible or impossible). To illustrate a typical debate, we might ask whether the true proposition that water is H_2O is *necessary*? Or, we might ask, given that there is no such property as (e.g.) *schmass*, whether it is *possible* that *schmass* existed? The possibility bias stacks the deck in favour of contingency/possibility, but what justifies *this*? When investigating the two options "P is possible" and "P is necessary", one could adduce evidence from the actual world in favour of the former but not the latter: P's being actual implies that P is possible but not that P is necessary (assuming the truth of $P \rightarrow \Diamond P$). But when investigating the truth of modal propositions more typical in the context of philosophical debates such as "P is possible" and "P is impossible" (when P is false, e.g., P = "*schmass* exists") or "P is contingent" and "P is necessary" (when P is true, e.g., P = "water is H_2O") knowledge of actuality cannot tell in favour of either option. So, the relative logical strength of possibility and necessity is unable to justify the possibility bias in typical philosophical contexts.

Perhaps we can compare the relative strength of possibility and impossibility, and of contingency and necessity, i.e., the logically contrary modalities relevant to typical debates in philosophy, if we think about modality in terms of possible worlds. Here's Nozick again:

> To say that something is possible is to say that it holds in at least *one* possible world, while to say that it is necessary is to make the stronger statement that it holds in *all* possible worlds [. . .] Moreover, to say that something is possible is weaker than to say that it is impossible, for to say it is impossible is to say that it fails to hold in *all* circumstances (all possible worlds), while to say it is possible is to say merely that there is at least *one* circumstance (one possible world) in which it holds. (Nozick 2001, 121)

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On this way of seeing things, to say that "*schmass* exists" is possible is just to say that "*schmass* exists" is true in at least one possible world, whereas to say that "*schmass* exists" is impossible is to say that "*schmass* exists" is false in all possible worlds. Since the latter claim requires something of *all* possible worlds and the former just requires something of at least one world, the latter claim is "stronger" than the former, or so Nozick suggests. Similarly, to say that "water is H_2O" is contingent is to say that it fails to be true in at least one possible world, whereas to say that "water is H_2O" is necessary is to say that it is true in all possible worlds. Again, since the latter, but not the former, claim requires something of *all* possible worlds, the latter claim may be thought to be *stronger*. By thinking about modality in terms of possible worlds, we seem to have a way of saying that possibility/contingency is weaker than impossibility/necessity, which may serve to justify the possibility bias in contexts that we care about.

My response to this involves going on the offensive and arguing that, in fact, on this way of thinking about modality in terms of other possible worlds, possibility is more burdensome than necessity.

5.1 Possible Worlds and Ontological Commitment

If, for some true proposition, P (perhaps P = "water is H_2O"), Paul asserts that P is contingent (i.e., that P is possibly false) and Niamh asserts that P is necessarily true (i.e., the negation of what Paul asserts), then, according to the possibility bias, the burden of proof is squarely on Niamh to say *why* P's modal status deviates from the default. According to the reasoning at the end of the previous section, this bias may be justified by the fact that Niamh's statement is stronger than Paul's in the sense that hers, but not his, requires something of *all* possible worlds.

Perhaps there is some plausibility to the idea that, *given* an array of possible worlds, a claim that requires something of all possible worlds is stronger than a claim that requires something of at least one possible world. If, however, we suspend judgement on whether there are any possible worlds besides the actual world, things look quite different.

Remember, we are assuming that P is true and that what is at stake is whether P is necessary or contingent, as is typical of debates in philosophy over which the possibility bias holds sway. For Paul's assertion "P is possibly false" to be true, there needs to be at least one possible world in which P does not obtain. Whereas the truth of Niamh's assertion "P is necessarily true" does not require the existence of any other possible worlds besides the actual world. Possible worlds semantics treats the possibility and necessity operators as existential and universal quantifiers (respectively) over worlds. But only existentially quantified statements are existentially *committing*. So, possibility looks burdensome in a way that necessity is not. This casts doubt on the Nozickian invocation of possible worlds to justify the possibility bias and perhaps even tells in favour of a *necessity* bias; if possibility, but not necessity, is existentially committing, then claims of mere possibility/contingency incur a burden of proof that must be paid to offset the cost of their ontological commitment.

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At this point, one might object as follows: you can't simultaneously suspend judgement on the existence of possible worlds and accept Leibnizian biconditionals[9] as giving the truth conditions for modal statements. If you accept Leibnizian biconditionals, you accept that there is a plentitudinous array of possible worlds. So, you cannot claim that Paul's assertion is more burdensome than Niamh's because it requires the existence of at least one other possible world because you were *already* committed to a plentitude of possible worlds by accepting a possible worlds semantics for Paul's and Niamh's assertions.

This objection fails because we can separate the question of the truth conditions for modal statements from the question of which modal statements are in fact (believed to be) true. We could, as deRosset points out, accept the Leibnizian biconditionals but still deny the existence of any possible worlds thereby rendering all statements true iff necessary and false iff impossible:

> [W]e could embrace the theory of possible worlds [. . .] without ontological extravagance, if we could swallow [. . .] Spinozistic necessitarianism. Then there would be only one possible world, the world we all inhabit. (deRosset 2014, 113)

Similarly, Divers (2004; 2009) argues that adoption of a possible worlds semantics only incurs ontological commitment if one also positively believes in mere possibilities; belief in necessities incurs no such commitment:

> [T]hose who accept the possible-worlds analyses, and are prepared to accept various claims of necessity and impossibility, would not be committed to asserting anything that involved a commitment—or, at least, any immediately demonstrable ontological commitment—to the existence of possible worlds. (Divers 2009, 214)

One could thus endorse a possible worlds semantics and remain agnostic about the existence of possible worlds and thereby suffer an "assertability deficit" as compared with the realist only when it comes to certain claims of mere *possibility*, because possibility, but not necessity, is interpreted as having existential content according to the possible worlds analysis of modality (Divers 2009, 214).

Given the Leibnizian analysis of modality, it is only the requirement to account for contingency/mere possibility that forces the existence of possible worlds besides the actual world. If we were Spinozistic necessitarians we could accept the Leibnizian biconditionals and remain committed only to the existence of the actual world. Hence, there is an important sense in which the possible worlds account of modality renders mere possibility/contingency more burdensome than impossibility/necessity, because the former, but not the latter, requires the existence of possible worlds besides the actual world. This, then, is why one may accept an account of modality in terms of other possible worlds but conclude,

[9] "Possibly p" is true iff p is true in some possible world; "necessarily p" is true iff p is true in all possible worlds; contingency and impossibility are then defined in terms of possibility and negation.

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contrary to the Nozickian line, that it is indeed mere possibility/contingency that is "stronger" than impossibility/necessity, because the former, but not the latter, requires the existence of other possible worlds besides the actual world. Possible worlds do not justify the possibility bias; if anything, they tell in favour of a necessity bias.

One might respond at this point that *abstract* possible worlds come cheaply since they can be understood as, say, constructions out of universals where we have independent reasons to postulate the existence of universals.[10] However, I think it is still very much an open question whether there are good independent reasons to posit the existence of universals. So, the point above stands if we suspend judgement on the existence of universals, which is surely the less "committal" view. The main point is that contra Nozick, there is reason to think that contingency claims are stronger/more committal than necessity claims.

6. Conclusion: Generalizing and Implications

In this article, I have highlighted *the possibility bias*—the pervasive (even if implicit) idea that assertions of possibility incur a lower justificatory burden than do claims of necessity—and I've surveyed, and rejected, four ways of justifying this bias. Perhaps some will find this piecemeal approach dissatisfying since it leaves open some other way to justify the bias. I'd like to think that the foregoing discussion is important nonetheless, given the prominence of the views discussed in relation to this question about the relative justificatory costs associated with claims of possibility and necessity. I hope to have at least encouraged philosophers to rethink the implications of *Humean naturalism*, *reductive theories of modality*, *evolution* and *the relative logical strength of possibility and necessity*, for the epistemology of modality. This article is intended to initiate a debate. I'd consider it progress if another author responded with a purported justification of the possibility bias not considered here.

Nevertheless, I do think that the delivery of some such justification is a far from trivial task. I think that there is a more general lesson to be drawn from the previous sub-section. The idea there was that given an account of modality in terms of possible worlds, possibility and not necessity is ontologically committing, and since ontological commitment is something to be avoided, assertions of *possibility* ought to be thought of as incurring a higher justificatory burden than assertions of necessity. Now this point already enjoys a degree of generality because it holds whatever one's ontology of worlds is. Whether one thinks that worlds are platonic universal properties, abstract propositions or whatever else, possibility, and not necessity, is going to be what incurs the ontological commitment to these entities. So, the point isn't restricted to those thinking about modality in, say, *Lewisian* modal realist terms.

But the point is more general still. *Dispositionalism* about modality (Borghini and Williams 2008; Jacobs 2010; Vetter 2015) has enjoyed prominence in recent years. On this view, very roughly, for it to be possible that P is for there to be some

[10] Thanks to a reviewer for raising this.

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dispositional property instantiated, the manifestation of which is or includes P; and for it to be necessary that not-P is for it to be the case that there is no disposition for it to be the case that P. It is *possibility* that is ontologically committing because for a non-actual possibility to obtain requires the existence of the relevant dispositional property. Necessity by contrast is understood negatively as the absence of relevant dispositions. If there were good independent reasons for adopting a modal metaphysics (such as dispositionalism) that makes possibility but not necessity ontologically committing, this would count in favour of rejecting the possibility bias and embracing a necessity bias.

Essentialism about modality, by contrast, seems to make assertions of necessity incur commitment to some essence or other; possibility is then understood negatively as the absence of constraint by essence (e.g., Fine 1994). However, some prominent proponents of essentialism about modality are careful to emphasize the point that essences *are not things* or *entities* (Lowe 2008; Tahko 2022). So, it is not obvious that even essentialism makes necessity more *ontologically* burdensome than mere possibility. It might be responded that essence claims are *ideologically* loaded, which suffices to make essentialist necessity claims metaphysically or epistemically objectionable in a way that essentialist contingency claims are not.[11] Either way, there is scope for further research here. If, for example, one thought it is important for philosophical method that the bias is justified and if essentialism justified it, then so much the better for essentialism and this would be an important point in favour of essentialism and against other currently popular accounts of modality.

In general, the debate here is open and, in my opinion, interesting and worthy of further serious investigation. This is because failure to justify the possibility bias has ramifications throughout philosophy. As mentioned in the introduction, many philosophical arguments proceed by appeal to weird and wonderful possibilities in their premises. But if we are not justified in believing these possibilities, then we are not justified in believing the conclusions of these *possibility arguments*. There is then the potential for sweeping scepticism about a whole class of philosophical arguments. Hence, a quite radically different meta-philosophical landscape may not be far off, one in which more consistent effort is put into defending claims of possibility perhaps by engagement with relevant aspects of science. And where possibilities cannot be appropriately defended, possibility arguments in which they feature as premises may be rejected or *reinterpreted*. We may still think that zombies (for example) are imaginable, even if not *really* possible. And so, we may interpret the zombie argument as telling us something about *our ways of thinking* about the world rather than about the world itself. Indeed, this seems a reasonable interpretation of certain arguments in ethics that appeal to very strange scenarios involving convoluted trolley problems or utility monsters, for example: it doesn't matter whether a utility monster is really possible because the point of this argument is to uncover our *own deep ways of thinking* about the relevant ethical issues. Why not, then, construe much of metaphysics and other subdisciplines of

[11] Thanks to a reviewer for flagging this.

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philosophy along similar lines? The full implications of rejecting the possibility bias await further exploration.

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