Why Lewis’s analysis of modality succeeds in its reductive ambitions.

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1. Lewisian Modal Realism

Many have felt the attractions of a reduction of the modal to the non-modal. There’s something unattractive about the claim that the world just could have been otherwise and that that’s the end of the matter — nothing more illuminating to say! Such a primitivism about modality threatens to leave the notion mysterious, and the primitivist leaves themselves open to the challenge from the sceptic that their notion is not in good standing. Of course, there are intermediate options between ending the story where the simple primitivist ends it and offering a fully reductive account of the modal — and I will have more to say later about just why a thorough reduction of the modal is desirable — but it is at least evident that the prospects for reduction are of interest.

The most well worked out attempt at a reduction of the modal to the non-modal remains David Lewis’s Modal Realism.¹ I say “attempt” at a reduction, not because I think it fails as a reduction, but because others have made the claim that it does. It will be the aim of this paper to argue that it does not fail: that Lewisian Realism is a genuine and successful, completely reductive account of modality. Along the way I hope to shed some light on what a reductive analysis of modality — and, indeed, analyses in general — need to accomplish to be successful, and why reduction is desirable.

Lewis’s starting point are the Leibnizian biconditionals: $p$ is necessary iff it is true at every possible world, possible iff it is true at some possible world, and actually true iff it is true at the actual world. If these biconditionals are true, then to provide a reduction of the modal to the non-modal, one need only provide non-modal analyses of the notion of a possible world, actuality, and what it is to be true at a world. Lewis makes two assumptions in his definition of a possible world. The first is unrestricted mereological composition: for any collection of objects, the Xs, there is an object which is the sum of the Xs. The second is that there is a dyadic equivalence relation $x$ is spatiotemporally, or analogously, related to $y$. That is, we can take all the things that

¹ The canonical source being, of course, Lewis (1986).
there are and divide them into groups such that every thing is in exactly one group, each member of a group bears some spatiotemporal relation (like is 4 meters from, or is 2 years from) to each other member of that group, or at least bears some relation analogous to a spatiotemporal relation, and no two members of distinct groups stand in any spatiotemporal relation.

A possible world, then, is an object whose parts are all and only the members of one of these groups. That is, it is a mereological sum each of whose parts is spatiotemporally related to each of its other parts, and is such that nothing that is spatiotemporally related to any of its parts fails to be a part of it. And this is merely a matter of definition. Think of this as introducing a new semantically simple term ‘possible world’ into the language. The fact that the string of letters ‘possible’ appears here is no more significant than the fact that the string ‘ham’ appears in ‘hamburger’: to conclude from the former that Lewis’s notion of a possible world is modal would be as much a mistake as when people assume that hamburgers are made from ham. If there is modality in Lewis’s account of what a possible world is, it must be because some of the notions we appealed to in defining such things involve modality, such as the mereological notions, or the concept of a spatiotemporal relation. Whether this is so is something we shall come back to.

Next, we need an account of what it is to be true at a world. According to Lewis, working out what’s true at a world is just a matter of restricting one’s attention to the portion of reality as a whole that is that world. There’s nothing special about modality here: we do the same thing as we would if we wanted to know whether something is, e. g., true in Scotland. Suppose, for example, I am interested in discovering whether ‘Everyone likes Scotch’ is true in Scotland. Here’s a bad way to answer me. You point to the existence of someone in England who doesn’t like Scotch, thereby showing that not everyone likes Scotch; you then argue that propositions aren’t true relative to places, and hence that my question is either confused, because it presupposes that

they are, or that it should be answered in the negative—that is, that ‘Everyone likes Scotch’ is false in Scotland because it is false simpliciter, and the ‘in Scotland’ isn’t doing any work, since propositions aren’t true relative to places. That would be a bad way to answer my query: there is obviously sense to be made of the question ‘Is it true in Scotland that everyone like Scotch?’, and the existence of someone in England who doesn’t like Scotch is irrelevant to answering this question. What the question is asking us to do is to restrict our attention to a portion of reality — the Scottish portion — to restrict the domain of our quantifier to people in Scotland, ignoring those in England and elsewhere, and to ask, with our quantifier so restricted, is ‘Everyone likes Scotch’ true?

The existence of the aesthetically challenged Englishman is obviously irrelevant to this question, for he is not in the domain of the quantifier, so restricted. And so it goes with worlds. When we ask whether ‘Everything is red’ is true at a world w we are, says Lewis, asking about the truth of the sentence with the domain of the quantifier restricted to those things which are parts of the world w. The claim is true at w if all the parts of w are red; the existence of non-red things that are not a part of w is utterly irrelevant.

Now, that only tells us how to assess some claims with our attention restricted to a world. It’s obvious how to assess ‘Everything is F’ or ‘The G is H’ with respect to a portion of reality: we just look to see whether everything that is a part of that portion of reality is F, or whether the G that is a part of that portion is H. It’s less obvious what to do with, e. g., ‘It’s morally wrong to eat apples’. I presume this is false. But could it be true? Is it true at some world? It’s not obvious how to tell. How do I assess that claim with respect to some portion of reality? Of course, on certain views of morality this wouldn’t be hard to answer. If a strong naturalism is true, and moral facts supervene on the instantiation of natural properties by ordinary entities in spacetime, then presumably we can assess a moral claim with respect to a portion of reality by looking at what natural properties are instantiated by the entities that are parts of that portion. But we shouldn’t have to rely on such an account of morality being true in order to accept modal realism: we should

2. I’ll drop the qualification henceforth.
have something to say about how to assess moral claims for truth with respect to a portion of reality even if moral truths are sui generis and non-natural. But it’s not clear how to do this: if moral facts don’t simply amount to facts about the natural properties of the inhabitants of worlds, how does restricting our attention to some such inhabitants impact on how we should assess a moral claim?3

The worry would be that any account here is going to have to involve modality: that the claim is true with respect to some portion of reality iff it would be true (simpliciter) were that portion of reality all that existed.

But really, I think this worry is a red herring. I think that what Lewis should say is that for some claims, restricting our attention to a portion of reality simply makes no difference. For those claims, whether or not they are true at some portion of reality — a fortiori whether or not they are true at a world — will simply be a case of whether or not they are true simpliciter.4 In that case, there is no room for contingency with respect to such claims: whatever their truth-value simpliciter, this will be their truth value at every world (and hence they will be either necessary, if true, or impossible, if false), since restricting one’s attention to a world can never make a difference.5 Now, you might think this is an objection to Lewis: that any account of modality should allow for the contingency of, e.g., moral claims, even given a sui generis non-naturalism about morality. Maybe it is so; I take no stand on that here. All that’s important for present purposes is that assessing a claim for truth at a world is a non-modal business according to the Lewisian. For the truths where it makes a difference, it’s a simple matter of assessment with respect to a restricted domain; for the truths where it doesn’t make a difference, it’s simply a matter of assessing for truth simpliciter.

So we have a story of what worlds are, and a story of what’s true at a world, and there is no obvious modality at play in either story. The final piece of Lewis’s story is the account of actuality: the actual world is defined as the world that has me as a part. Not that there’s anything special about me: everyone can truly say, “The actual world is the world that has me as a part.” ‘Actual’, says Lewis, is an indexical like ‘here’ or ‘now’: it serves to pick out the world of the utterer — the unique world that has them as a part — just like ‘here’ and ‘now’ serve to pick out the spatial or temporal location of the utterer. So two people in two distinct worlds can make different claims about what is actual without there being genuine disagreement, in the same way speakers at different spatial/temporal locations can make different claims about what’s going on here/now without there being any genuine disagreement. So actuality is just me and my spatiotemporal surroundings: again, no obvious modality here.

3. Other potentially recalcitrant claims include: claims about the laws of nature, given a primitivist view on laws, or a view on which laws are relations amongst transcendent (Platonic) universals; claims about non-spatiotemporal entities like sets and numbers (see fn. 5); logical truths, such as what is a theorem or what follows from what; etc. The common theme is that these truths do not appear to be about, or made true by, spatiotemporal entities; so it’s hard to see what restricting your attention to some spatiotemporal entities rather than others does when assessing them for truth.

4. One is reminded here of Fine’s (2005) distinction between those truths which would be true no matter how the world was, and those which are true irrespective of how the world is.

5. Lewis on sets can be seen as a particular instance of this. Since pure sets, at least, are not, presumably, spatiotemporal, and a fortiori not spatiotemporally related to anything, they are by definition not a part of any world. Nonetheless, thinks Lewis, we can make sense of the claim that pure sets exist at a world: while they are not parts of any world, they can exist from the standpoint of a world, where an entity exists from the standpoint of a world iff it “belongs to the least restricted domain that is normally ... appropriate in evaluating the
Lewis's account of actuality demands that objects are world bound: they are parts of only one world. For, obviously, if I existed at multiple worlds, I would not succeed in my definition of 'the actual world' as "the world that has me as a part", for there would be a false presupposition. This demands a wrinkle in the above account of what is true at a world. For modality de dicto, the above account is fine. But when we're concerned with modality de re — when I want to know whether I might have been a tree, e.g. — the account must be complicated. For if I restrict my attention to the things that are parts of some non-actual world w and ask whether 'Ross is a tree' is true with my attention so restricted, the answer will always come back, on the unmodified account, that it is not true, because I will never be amongst the things I have restricted my attention to, because I am a part of the actual world only. And so the unmodified account tells us that a predication of me is only true at one world, the actual world; hence, no false predication of me is true at any world whatsoever, and hence we are threatened with the extreme essentialist view that everything actually true of me (and likewise, mutatis mutandis, for any thing whatsoever) is not possibly false of me. In order to avoid this extreme essentialism, Lewis says that for a de re claim to be true at a world w requires not that the res itself be a part of w and be the way the claim says it is, but rather

6. More precisely, it demands that objects which are parts of any world are parts of exactly one world. Given unrestricted composition, Lewis is committed to objects which have as parts objects which exist at different worlds; but these objects don't exist at any world: there is no world which has them as a part. The existence of such objects doesn't threaten the definition of 'actuality': only objects which are parts of more than one world would do that.

7. According to the endurantist, I exist at more than one time. If it is so, 'now' can't serve to pick out the temporal location of the utterer, for they have no unique temporal location. But here there is an easy fix: 'now' serves to pick out the temporal location of the utterance. But this won't help in the modal case: we can't say that utterances but not utterers have a unique modal location, and define the actual world as the unique world that has my utterance 'I am actual' as a part. For if the utterer belongs to some non-actual world v then the utterance, by virtue of being spatio-temporally related to the utterer (which it must be if it is to be actual), is also spatio-temporally related to v, and hence, by the definition of 'world', is a part of v — contrary to our assumption that it is world-bound.

Lewis's Analysis of Modality

that there is a counterpart of the res at w that is the way the de re claim says w is. So, e.g., if I want to know whether 'Ross is a tree' is true at w, I look to the parts of w and ask whether any of them are both a tree and my counterpart: the claim is true at w iff there is such a part. What is a counterpart of me? An object is my counterpart if it is saliently similar to me, where the standards of similarity that are salient depends on the context. Again, no obvious modality anywhere in this story.

So the resources Lewis needs to get his attempted reduction of modality going are:

(i) Unrestricted composition, to ensure the existence of the worlds.8

(ii) The existence of an equivalence relation is spatiotemporally related to, to specify which of all the mereological sums that there are, are the worlds.9

8. Two caveats. Obviously, full unrestricted composition isn't necessary to ensure the existence of the worlds. One could, for example, hold that composition only ever occurs amongst worldmates. Secondly, it's not obviously bad for Lewis's analysis if there simply are no worlds. The work done by talk of worlds is in separating reality as a whole into different possible circumstances; but all one needs in order to be able to say whether some objects or events, etc., belong to the same possible circumstance is to be able to say whether or not they are worldmates, and one doesn't need there to be worlds in order to say whether some things are worldmates: they are worldmates iff they are spatiotemporally related. So instead of saying that there are worlds, we could rather introduce a plural predicate: 'The Xs world' is stipulated to mean that the Xs are worldmates, and that nothing is a worldmate of any of the Xs that is not one of the Xs. We would then replace talk of p's being true at a world w with talk of p's being true at some Xs which world. This doesn't pose any obvious problems for Lewis's account of 'true at' in terms of restricting our attention to a portion of reality: we're merely restricting our attention to some things and asking what's true at them rather than to some thing and asking what's true at it. And so perhaps Lewis can refrain from even making any assumptions about mereology; but I will deal with the theory as Lewis gives it to us, and assume unrestricted composition.

9. Perhaps a Lewisian realist could cope with is spatiotemporally related to failing to be an equivalence relation by tweaking the definition of 'world'. I won't worry about this here: of all the things you might object to about Lewisian realism, that it assumes that is spatiotemporally related to is transitive is not high on the list.
(iii) The account of evaluating a de dicto claim once our quantifiers are restricted to a portion of reality, to say when a de dicto claim is true at a world.

(iv) The notion of a standard of similarity’s being contextually salient, in order to say what a thing’s counterparts are, and hence to say when a de re claim is true at a world.

There are two ways, then, in which we might argue that Lewis doesn’t succeed in giving a thorough reduction of the modal to the non-modal. Firstly, we might argue that he is wrong to think the above resources sufficient, and try to show that the extra resources needed involve modality. Secondly, we might argue that, despite appearances, modality is involved in the above resources. I will take these in turn.

2. The Lycan/Shalkowski objection

Various people have made an attempt at arguing that for Lewis’s account of modality to succeed, he needs resources beyond those mentioned above, and that such resources must be modal for the account to work. If so, Lewis’s reductive ambitions must fail. I think this is not so, but it is instructive to see why. I will begin by looking at a familiar charge against Lewis: that his notion of a “possible world” must be modal if his theory is to give the correct results.

This charge has been made by William Lycan and Scott Shalkowski. Lycan says:10

Lewis mobilizes a modal primitive … . It is ‘world’. ‘World’ for him has to mean “possible world,” since the very flesh-and-bloodness [of worlds and non-actual individuals] prevents him from admitting impossibilia. Some sets of sentences describe “worlds” and some (the inconsistent ones as we know them to be) do not; but Lewis cannot make that distinction in any definite way without dragging in some modal primitive or other.


And here is Shalkowski:11

According to modal realism, the existence of a group of objects, the possible worlds, is supposed to be the foundation for modal truths. The existence and natures of these worlds is the primitive feature of modal reality, while the necessitites and possibilities are parasitic on the nature of the set of worlds. For this account to work, there can be no modal restrictions on these worlds. Possible worlds must constrain facts of modality; facts of modality must not restrict the number and nature of possible worlds. Were God creating the entire Lewisian plurality of worlds, there would be no modal restriction on God’s act of creation … . To say that God had no choice as to which or how many worlds to create is to say that there are modal constraints on the number and nature of possible worlds, and this is tacitly to give up the reductive features of the modal realist’s program.

One constraint on any reductive theory of modality is that all objects in the reductive base, those things whose existence and nonmodal attributes are to ground modality, must be objects that possibly exist… [A]ll the objects [must] meet the prior modal condition that they are possible. [p. 677; original italics]

For the set of nonactual objects to be sufficient for grounding modality it must … meet a second modal condition. The set must be exhaustive, and it is exhaustive only if it cannot have any more members… . The modal realist’s claim that there are no more worlds is irrelevant apart from the claim that there cannot be any more. If

there could be more but just aren’t, the set is inappropriately small. [p. 675]

Actually, I think there are two distinct objections being run together in Shalkowski’s paper. One of them is the same as, or at least very similar to, Lycan’s; the other is easier to dispense with, so we’ll deal with that first.

Shalkowski says “For [Lewis’s] account to work, there can be no modal restrictions on these worlds … [F]acts of modality must not restrict the number and nature of possible worlds. Were God creating the entire Lewisian plurality of worlds, there would be no modal restriction on God’s act of creation.” 12 It seems that Shalkowski is worried here about modal facts concerning the space of possible worlds as a whole. For Lewis, what’s possible for a world is given by how its companion worlds are. But what about what’s possible for reality as a whole — that is, all the worlds? Lewis says that the facts about the worlds as a whole are a non-contingent matter; 13 I take it that Shalkowski’s worry is that if this is so, there’s no explanation for where the modal restrictions are coming from. Here is a modal restriction on the space of worlds, but the space of worlds was meant to be what yielded any modal restrictions.

This objection can be easily set aside. It’s not that there can’t be any modal restrictions on the nature or number of worlds for Lewis’s account to work; it’s that any such modal restrictions must themselves be amenable to the Lewisian analysis. All modality must be amenable to the Lewisian analysis for the analysis to provide a thorough reduction of the modal, a fortiori any modal facts about the space of worlds themselves must be so amenable. And no modal facts count against the analysis if they are amenable to the analysis itself, a fortiori it is no objection to the analysis if there are modal restrictions on the number or nature of worlds, provided those modal facts are themselves amenable to analysis in the Lewisian manner. It would indeed be a damning objection to Lewis were there modal facts about the number or nature of worlds which proved resistant to the proposed analysis; that’s because it would be damning were there any modal facts, regardless of subject matter, that proved resistant to the analysis, since the analysis is meant to be a general account of what modality is. But the mere obtaining of such modal facts is neither here nor there, and Shalkowski gives us no reason to suppose that such facts are themselves resistant to the Lewisian analysis.

Here’s how the Lewisian should deal with modal facts about the space of worlds themselves: claims about the space of worlds as a whole are amongst the claims such that restricting your attention to a portion of reality cannot make a difference in how you assess them for truth or falsity. Hence, as with all such claims, claims about the space of worlds as a whole are simply necessary, if true, or impossible, if false. 14 If you’re assessing ‘There are pigeons’ for truth at a world, you’re restricting your attention to some things and asking whether pigeons are amongst them: the answer depends on which things it is you’re restricting your attention to, and it is in virtue of that that ‘There are pigeons’ is contingent. But when it comes to claims about the space of worlds as a whole — such as that there is a plurality of worlds — restricting one’s attention simply makes no difference. For Lewis, when we’re asking about what is the case, we’re asking most of the time about what is the case at some small portion of reality — in which case, of course it often matters which portion of reality we’re concerned with. And that’s what contingency is, says Lewis: variation from one portion of reality to another. But of course how reality is as a whole doesn’t vary from one portion of reality to another! 15 That’s why

12. Ibid.

14. See footnotes 3 and 5, and the corresponding discussion in the text. What I say here is, I think, broadly consonant with the treatment developed by Divers (1999).

15. Compare: Whether ‘There is beer’ is true or false depends on whether I am restricting my attention to the contents of my fridge or including the contents of the grocery store; but whether ‘There is unrestrictedly beer’ is true or false
Lewis’s account of modality simply doesn’t allow for contingency in such claims: they are necessary if true, and impossible if false.

So the modal facts about the space of possible worlds are perfectly amenable to the Lewisian analysis. Such modal truths pose no threat to Lewis’s reductive ambitions, and so Shalkowski’s first objection is unmoving. I propose then to move swiftly on to the common objection from Lycan and Shalkowski.

Here’s the objection, as I see it. I said above that the occurrence of ‘possible’ in the phrase ‘possible world’, as Lewis uses it, is no more significant than the occurrence of ‘rat’ in ‘Socrates’: as far as Lewis’s theory goes, we might as well call those big individuals ‘squanks’, and say that something is possible iff it’s true at some squank. The Lycan/Shalkowski objection is basically that if that is so, then nothing guarantees that Lewis’s account is even materially adequate. Who knows whether the facts about squanks match up in the appropriate manner with facts about what could be the case? We have no reason to believe there is such a correspondence: unless, of course, our understanding of squanks is implicitly modal, so that their nature compels the facts about them to match up with the facts about what’s possible. The material adequacy of Lewis’s proposed analysis demands both that there is a world corresponding to every possibility, without exception, and that there are no worlds corresponding to any impossibility. But if the notion of a world is not modal, what can ensure this? Nothing, they claim. To guarantee that there is the required correspondence between what’s possible and what’s happening at some world, argue Lycan and Shalkowski, we need the notion of a world to be a modal one. These worlds must be possible worlds, where this isn’t just a matter of labeling, but rather makes appeal to our prior modal notions. Only once you use a modal notion to characterize the nature of these things do we have a guarantee that the facts about them correspond in the right way to the modal facts to make the Leibnizian biconditionals come out true. But, of course, if we need to use a modal notion to characterize the nature of worlds, then ‘world’ is not a non-modal notion, and hence we lack a fully reductive account of modality.

I think this objection is mistaken and relies on a misunderstanding of the nature of analysis. Suspicion should be raised by the fact that, if the objection is successful, it’s hard to see how any reductive analysis could be possible. Consider a proposed reductive analysis of the Φ-facts in terms of the Ψ-facts. A condition of success is that the analysis be materially adequate: there had better be the right kind of correspondence between the Φ-facts and the Ψ-facts. But unless our concept of Ψ implicitly involves an appeal to the concept of Φ, what can ensure this? But of course, if our concept of Ψ does so involve the concept of Φ, the reduction must fail.

That can’t be right. What goes wrong? I think talk of “ensuring” that an analysis is materially adequate is misleading. In one sense, it’s trivial that that the analysis is ensured to be materially adequate. After all, if the analysis of the Φ-facts in terms of the Ψ-facts is indeed correct, then there is no question of the Ψ-facts not corresponding in the appropriate manner (i.e. to ensure material adequacy) to the Φ-facts — precisely because, if the analysis is correct, the Φ-facts simply are the Ψ-facts!

I think that simple reply is broadly correct. So Lewis should simply reply to Lycan and Shalkowski as follows:

What ensures that the worlds correspond in the right way to the possibilities is my analysis of possibility. There is no question of there being a world corresponding to an impossibility, because my analysis says that what it is to be possible is to be true at some world, so of course whatever worlds there are correspond to possibilities, and no world corresponds to an impossibility. (Similarly, there is no question of any world containing an “impossible individual”, since my analysis tells you that to be a possible individual just is to exist at some world.) I need no “prior modal constraints” on the nature of worlds to ensure this: what I mean by ‘possible’ ensures this. Similarly, there
is no question of there not being enough worlds — i.e., that some possible circumstance be unrepresented by a world. Given what my analysis says possibility is, it simply follows that whatever the extent of the space of worlds happens to be, that is the extent of what is possible. Again, no prior constraints on the nature of worlds is necessary to ensure that there is a world for every possibility: this is guaranteed by what I mean by ‘possibility’.

So Lycan asks: “How can you, Lewis, avoid admitting impossibilia? Don’t you need ‘world’ to mean ‘possible world’ or ‘individual’ to mean ‘possible individual’ to ensure that this be the case?” Lewis should reply: ‘No, I don’t need a modal understanding of ‘world’ or ‘individual’. I can guarantee that there are no impossibilia because if they exist, my analysis says precisely that they’re not impossibilia — they’re possibilities!” If Lewis’s analysis is right, then if there turns out to be a world with a round square as a part, then that is not for it to turn out that there is an impossible world; it’s for it to turn out that round squares are in fact possible after all, since to be possible just is to be true at some world, if the analysis is correct. Likewise, Shalkowski asks how Lewis can guarantee there’s a world for every possibility. Answer: because if Lewis’s analysis is right, then if there turns out to be no world with a talking donkey as a part, e.g., then that is not for it to turn out that there is a possible world missing; it’s for it to turn out that talking donkeys are not in fact possible after all, since to be possible just is to be true at some world, if the analysis is correct. There’s simply no challenge to Lewis when it comes to ‘ensuring’ that there are worlds enough for the possibilities, or ensuring that the worlds are not too many to encompass impossibilities: since the space of possibilities is given by the space of worlds, it’s simply trivial that if the analysis is correct then there are exactly worlds enough for possibility.

Here’s a bad response to this defence of Lewis: “You’ve said the analysis itself ensures that the worlds match up to possibilities in the required manner. That if there are worlds with, e.g., round squares, then if the analysis is correct, that just means that round squares are possible, and so it is a trivial matter to ensure that impossibilia are excluded from ontology. But whether the analysis is correct is what’s up for debate — you can’t rely on the analysis without begging the question!”

That’s a bad response. If someone is trying to show that your theory doesn’t work, you’re perfectly entitled to rely on your theory in arguing that those objections don’t succeed. Lycan and Shalkowski are the ones putting forward the argument against Lewis. It’s up to them to show that his theory is false, and Lewis can appeal to any of his beliefs in resisting their argument. Just because his objectors don’t also believe what he relies on when making his defence doesn’t mean he begs the question: it just means he disagrees with them.

Now, there’s something else one might be after if asking for a guarantee that the analysis is materially adequate. We could be asking for a guarantee that the facts about what’s true at a world match up, more or less, with what we pre-theoretically take to be the facts about what’s possible. Here’s the idea. I said that Lewis can respond to Lycan’s request for a guarantee that his (Lewis’s) ontology contain no impossibilia by pointing out that according to his analysis of modality, whatever happens to exist is possible. Lewis doesn’t need an understanding of ‘world’ that will rule out worlds’ having round squares as parts: if there is a world with a round square as a part then that, according to the analysis, just means that round squares are possible. But one might object that we simply know that round squares are not possible. So Lewis really does need to ensure that no world has a round square as a part, because otherwise his analysis would incorrectly yield the conclusion that there could be round squares.

16. This latter challenge is the gist of Lycan (1991). In reply to Miller’s (1989) claim that Lewis has a non-modal definition of ‘world’ available, Lycan argues that this is not so, because the definition talks about sums of ‘worldmates’, and in order to ensure that round squares don’t end up as parts of worlds our notion of the individuals that are worldmates must be implicitly modal: they are the possible individuals.
Here’s an analogy. Consider the consequentialist analysis of goodness in terms of best outcome. The consequentialist says that there is an ordering of possible histories from best to worst, and that the good actions for person P to perform in a particular set of circumstances C are those actions that P can perform in C whose consequences lead to no worse a history than that of any other possible action P could perform in C. Obviously, the consequentialist account of goodness is acceptable if and only if the facts about what’s good correspond in the appropriate way with the facts concerning the betterness ordering of the consequences of possible actions. A well known style of objection to consequentialism argues that this is not the case: no matter how good the consequences, says the objector, torturing babies for fun, e.g., is just wrong!

Now, here’s one way of taking that objection:

Torturing babies for fun is wrong. The consequentialist says that an action is wrong only if there’s another possible action that would have better consequences. So for their account to be materially adequate, they had better ensure that there’s something we can do other than torturing babies for fun that would have better consequences. But the only way to ensure this is if the way consequences are ordered from better to worse meets the prior moral condition that histories where babies are tortured for fun are worse than ones in which they are not.

It would be a damning objection to consequentialism if the notion of betterness they use to order consequences of actions implicitly involved the notion of goodness that they are attempting to analyse. But the consequentialist should not be moved at all by this objection. She doesn’t believe there are “prior moral conditions” to be met: the moral facts are, she thinks, given by the ordering of consequences of possible actions from better to worse. If the consequences of torturing this baby for fun really are better than the consequences of not doing so then, says the consequentialist, that’s not for it to turn out that a wrong action has the best consequences; it’s for it to turn out that it’s not the wrong thing to do after all.

However, here’s another way of taking the objection that may move the consequentialist more:

We just know that torturing babies for fun is wrong. If an account of goodness tells us that torturing babies for fun can be the good thing to do then that’s just a reductio of the account. So you’d better ensure that there’s always something we can do other than torturing babies for fun that would have better consequences, if you want your account of goodness to be acceptable."

The two objections are crucially different. The first aims to embarrass the consequentialist into admitting that they haven’t provided a reductive account of goodness, because they need to appeal to that very notion when ordering the consequences of actions from better to worse. The objection challenges the consequentialist’s reductive ambitions. This objection is easily resisted. The second objection does not aim to show that the notion of ‘better than’ used in the ordering of consequences from better to worse must implicitly involve the notion of goodness that was to be analysed. Rather, the second objection says that for the account of goodness to be warranted in the first place, the ordering of consequences must respect certain of our pre-theoretic beliefs about what is good.

The thought behind the second objection is simply this. Analyses can be to some extent revisionary. Perhaps we pre-theoretically think that infanticide is always wrong; but it’s open that we can learn from a successful moral analysis that there are circumstances in which it’s permissible. But an analysis can’t overturn everything we thought to be true about the facts to be analysed. If a proposed analysis of goodness told us that murder was always permissible, giving to charity always forbidden, torturing babies supererogatory, etc., etc. — well, we
just shouldn’t think that what that analysis is talking about is what we mean by ‘goodness’. A certain amount of coherence with our pre-theoretic beliefs about the phenomenon to be analysed is necessary in order for us to accept the account as an analysis of that phenomenon, rather than as simply having changed the subject.

I said that Lewis should respond to Lycan and Shalkowski thus: that if it turns out that there are worlds with round squares as parts, that’s just for it to turn out that round squares are possible after all; if it turns out that there’s only one world, our own, that’s just for it to turn out that everything is necessary after all. It’s not for it to turn out that there are impossible worlds, or not worlds enough for possibility, respectively. I think that response is right, but one might still complain as follows:

But we just know that round squares are not possible and that more is possible than what is actual, so Lewis can’t simply end the story here. He needs to be able to account for these pre-theoretic data about possibility by ensuring that there are no worlds with round squares as parts, and that there’s more than one world, in order for us to think that what’s being analysed is really possibility. If Lewis is leaving it open that there’s only one world, or that there are worlds containing round squares, then while I accept that if his analysis is right this wouldn’t lead to a mismatch between modal facts and facts about worlds, it undermines my warrant for thinking that the analysis is right in the first place.

There’s definitely something right about that. An analysis can be informative, but it can’t be drastically revisionary, so what’s true at a world had better not come too far apart from what we pre-theoretically think is possible if Lewis’s analysis is to be acceptable in the first place. But crucially, it need be no part of the analysis itself that the facts about what’s possible according to the analysis match up more of less with our pre-theoretic conception of those facts. An account of what possibility is, is one thing; an account of what is in fact possible, another; and these two things shouldn’t be confused. Lewis owes a story about the extent of worlds, certainly; and the resulting account of what is possible had better not be too revisionary with respect to our pre-theoretic modal beliefs; but there should be no demand that this story about the extent of worlds fall out from the analysis — that it be entailed by the meaning of ‘world’ or the nature of worlds. That would be to confuse the two things that should be kept separate.

So Lewis’s analysis of what possibility is needn’t ensure that there is the right kind of correspondence between what worlds there are and what we pre-theoretically take to be possible. There simply needs to be such a correspondence (or perhaps: we simply need to have a warranted belief in there being such a correspondence in order for us to have warrant for the analysis); it need not be guaranteed by the nature of the worlds or the definition of ‘world’ that there is such a correspondence (and so our warrant for belief in such a correspondence needn’t come solely from the analysis). After all, it’s not a conceptual truth that it’s not possible that there are round squares, or that something other than what is actual is possible. Dialetheists like Graham Priest believe that some contradictory states of affairs are possible;¹⁷ Spinoza thought that everything that was true was necessarily true.¹⁸ I think they’re wrong, but I don’t want to claim that they’re conceptually confused or employing a concept other than our concept of possibility! They are using the same modal concepts we are, and they are competent graspers of the concept and users of the term ‘possible’; they just have radical views about the extent of what is possible.

Compare again the case of the consequentialist. Of course the consequentialist can, and many do, simply bite the bullet and claim that there are possible circumstances in which it’s good to torture babies for fun. Perhaps their account of goodness can survive this, perhaps not. For present purposes, I am interested in what the consequentialist

¹⁸. At least, this is a common and plausible interpretation of Spinoza. See Newlands (2010) for discussion.
can do if she wants to hang on to the claim that it is always and forever wrong to torture babies for fun. She’ll need to claim that there’s always going to be something we can do that will have better consequences than torturing babies for fun. So when we order with respect to betterness the histories that would obtain if each of the possible actions open to us were taken, a baby-torturing history had better never come out (tied for) best. But it need be no part of the concept of ‘better’, or the nature of betterness, that this is so: it only need be so. Or perhaps, for consequentialism to be acceptable, we need to be able to gain warrant that it is so. But again, this warrant needn’t come from the consequentialist analysis of goodness, since it need be no part of the analysis of goodness that torturing babies for fun is never the good thing to do. The account of what goodness is, is one thing; the account of what is in fact good, another.

Here’s a toy example of how the consequentialist could achieve the desired results. Take betterness to simply be most happiness, and suppose that God will punish people who torture babies for fun with infinite unhappiness in Hell, and that every other action will lead only to some finite level of happiness or unhappiness. If that’s correct, then any history without a baby being tortured for fun is better than any history with. Now, I’m not recommending that the consequentialist believe this; the point is just that if the consequentialist wished to hang on to the pre-theoretical moral claim that it’s never okay to torture babies for fun, this would be a way to do it. And it’s clear that this theory does not smuggle the concept of goodness into the concept of betterness as applied to consequences of actions: the latter concept is cashed out solely in terms of maximizing happiness. The theory is, of course, designed precisely to ensure that the facts about betterness match our pre-theoretic beliefs concerning the facts about goodness. But it’s not the consequentialist analysis itself that guarantees this match. As far as the analysis of goodness in terms of having best consequences (i.e., the consequences that maximize happiness, on this account), it’s simply an open question whether or not torturing babies for fun can ever be good. It’s something else the consequentialist believes — something not entailed by the analysis — that closes this question, in a way that shows that this consequentialist is not revisionary with respect to this tenet of folk morality. And this is okay: the analysis of goodness is one thing; the extent of what is good, another thing entirely. There is no need for this question about the extent of what’s good to be settled by the analysis itself.

Likewise, the analysis of possibility is one thing, and the extent of what is possible, another. Since it’s no part of the concept of modality that round squares are impossible and talking donkeys possible, Lewis doesn’t need it to fall out from the definition of ‘world’, or from the nature of worlds, that there is no world with a round square as a part or that there is a world with a talking donkey as a part. However, since it is true that round squares are impossible and talking donkeys possible (so I believe, at least), it must be true that there are no worlds with round squares as parts and that there are worlds with talking donkeys as parts. And, indeed, Lewis says that it is true. It doesn’t follow from the nature of worlds, or from the definition of ‘world’, that the extent of the worlds is so — but so what? It needn’t do so, since it is no part of the analysis of modality that the extent of possibility is so. All that need be the case is that the space of worlds is in fact so, since all that is the case is that the extent of modality is in fact so. And what is the reason for thinking that the space of worlds is so? Why should we believe Lewis that there is a world with a talking donkey as a part, and no world with a round square as a part? Because of the theoretical utility such an ontological posit affords — part of which, of course, is that it allows for a reduction of the modal. Now of course, you could question the methodology here — you might think that theoretical utility is not a good reason to accept metaphysical theses — but it’s clear that that would be a very different style of objection from the Lycan/Shalkowski objection, and would be nothing to do with Lewis’s appealing to hidden primitive modality.

3. The Divers/Melia objection

So I think the Lycan/Shalkowski objection poses no threat to Lewis. I want to now consider a more subtle objection leveled against Lewis by
John Divers and Joseph Melia.\textsuperscript{19} Divers and Melia, in contrast to Lycan and Shalkowski, think that there is nothing modal in any of the materials Lewis uses to define ‘world’, or what it is to be true at a world, etc. Rather, they claim that Lewis is unable to give us a complete account of what worlds there are without resorting to primitive modality.

Their argument is as follows. They assume that it’s possible for there to be alien natural properties. That is, it’s possible for there to be perfectly natural properties which are actually uninstantiated, and which can’t be “built up” from actually instantiated properties, in the sense that they are not conjunctive properties with actually instantiated conjuncts, or structural properties with actually instantiated constituents, etc. If this is possible, then Lewis’s principle of recombination — basically, the principle that we can get new worlds by patching together parts of worlds we’ve already got — doesn’t give us a complete account of what worlds there are, since recombing actual materials, or materials obtained by recombing from actual materials, won’t generate alien natural properties. (That’s basically what ‘alien’ means.) And so in order to say what worlds there are, we need to invoke more than recombination.

Now, it seems that if there could be alien natural properties, there should be no finite bound on the number of possible alien natural properties out there. It seems ad hoc to say there are exactly 17, or a billion, alien natural properties in the multiverse; and so it seems that if we accept the possibility of alien properties in the first place, we should hold that for any finite natural number \( n \), there are at least \( n \) alien properties to be found across the space of worlds. But once this is granted, argue Divers and Melia, there is no way to give in non-modal terms a complete account of what worlds there are. For we can’t just say that there are infinitely many alien natural properties spread across the worlds; or that for any finite \( n \) there is a world where \( n \) distinct alien natural properties are instantiated. Why not? Well, to satisfy those tenets there has to be, across the space of worlds, a denumerable sequence of alien natural properties \( P_1, P_2, \ldots, P_n \).

Now, let \( S \) be the set of all the worlds that there are. \( S \) satisfies both those tenets, of course; but so does the set \( S^* \) which is the subset of \( S \) containing all the members of \( S \) except those worlds where, say, \( P_1 \) is instantiated. Because with \( P_1 \) missing, there are still of course infinitely many alien properties left; so any tenet you laid down to tell you that there were infinitely many alien natural properties out there in the space of worlds won’t be able to discriminate between its being \( P_1, P_2, \ldots, P_n \) that exist across the worlds or merely \( P_2, \ldots, P_n \) that exist. And so there is no tenet you can lay down that will completely yield \textit{all} the worlds that there are — unless, of course, we say something like “All the possible alien natural properties are instantiated somewhere across the space of worlds.” But that only does the job if the ‘possible’ here is a modal primitive, not to be subjected to the Lewisian analysis (for otherwise this would reduce to the trivial “All the alien properties that exist across the worlds exist across the worlds”). And so the only way to completely say what worlds there are is to invoke primitive modality.

A couple of attempts have been made at showing that Lewisians can meet the challenge Divers and Melia lay at their door. Bremer (2003) argues that there are additional non-modal tenets available to Lewis that will plug the gap, whereas Paseau (2006) argues that the Divers/Melia argument doesn’t in fact show that the tenets considered are incomplete in the sense Divers and Melia claim. I am with Divers and Melia in thinking that these attempts have been unsuccessful and I won’t consider any such line of response further.\textsuperscript{20} Rather, I will argue that meeting the Divers/Melia demand is simply unnecessary: that while Divers and Melia are right about what the Lewisian realist cannot do, there is no demand that she should be able to do it in the first place. Hence while Divers and Melia are right about the “analytic limit” of Lewisian realism, this poses no threat to that theory’s reductive ambitions.


Here's an explicit statement of what Divers and Melia think the Lewisian must be able to do, but cannot. 21

What we require of a genuine realist analysis of the concept of possibility ... is that the theory ... should combine with our prior modal opinions to underwrite the truth of (P). [(P): It is possible that P if there is a world according to which it is the case that P.] More specifically ... (i) that the ontological component of [the theory] generates a set of worlds that determines the truth-value of the existential claims about worlds that figure as the right-sides of instances of (P) and (ii) that these truth-values should match the left-side possibility claims, these truth-values being assigned — by and large — on the basis of our prior modal beliefs.

I see no reason to think that this is a condition for success on the analysis. As I said in response to the Lycan/Shalkowski objection, an account of what possibility is, is one thing; an account of the extent of what is possible is quite another. I see no reason at all to think that a successful account of what possibility is should by itself settle the extent of what is possible.

Divers and Melia talk of the ontological components on the analysis “generating” the set of worlds. That’s only metaphorical, of course: the worlds are just there — there’s no sense at all in which they exist because of the ontological posits of the theory, or anything like that. So their demand that the theory “generate” the set of worlds that meet the completeness condition (i.e., so that there is a world for every circumstance to be judged possible, where the circumstances that are to be judged possible are given by and large by our prior modal opinions) is really just the demand that the theory entail that there are those worlds. So then it is just the demand that the theory that tells us what possibility is entails a complete and accurate account of what happens to be possible. So basically, that’s a demand that the analysis of the concept fix the facts involving that concept. I think we should reject such a demand, not just for the modal concepts, but for any analysis. When the consequentialist tells us what goodness is, she can leave it open what is in fact good. If I offer you an account of what mathematical truth is, I have to leave it open to some extent what the mathematical truths are, since no (finite, recursive) set of principles entail all the mathematical truths; and yet surely that doesn’t rule out the possibility of a reductive account of what mathematical truth is. Likewise, then, an analysis of possibility can stay quiet on the extent of possibility.

Indeed, due to the distinctness of the two tasks, I don’t think it would be any threat to Lewis’s reductive ambitions were he to use modal vocabulary in his statement of the extent of possibility. The motivation for having a non-modal account of the space of worlds, like the principle of recombination, is not that appealing to modality would thwart the attempt at reduction, but simply that the resulting account of the extent of possibility would be less useful. It’s telling, I think, that the reason Lewis doesn’t just say “There’s a world for every way the actual world could be” is not that this makes appeal to modal notions (ways the actual world “could” be), but rather that if his analysis is correct this claim simply amounts to the trivially true “There’s a world for every way some world is”. 22 It’s the uselessness of the claim that leads it to be rejected, not the fact that it’s modal. 23

22. The triviality of that claim was noted by Peter van Inwagen (see Lewis [1986], p. 86). Actually, Lewis is a little quick to concede the point, since we’re comparing de re and de dicto modality here. A way the actual world could be refers to a representation of a de re possibility, where the re is the actual world. So the claim is only trivial if we identify the de re ways the actual world might have been with the de dicto ways that might have been. But even if the claim is not trivially true, it’s obviously hardly helpful.

23. Likewise, the reason he invokes recombination instead of just saying “There’s a world for every way we pre-theoretically think things could have been” is just that he thinks that claim is false: some of our pre-theoretic claims need to be revised. His only goal is to say something informative and true about what worlds there are: just making a list would be fine, if it could be done.
Or consider “There’s a world for every circumstance God could have brought about.” That’s not trivial, with or without Lewis’s analysis: with that analysis it yields the claim that the extent of what’s possible and the extent of what’s within God’s power are the same. That claim is informative and can tell us something about the extent of possibility, especially if combined with background beliefs about God’s powers. But unless we have a substantial theory about God’s abilities, it’s not going to be that informative. Could there be talking donkeys? There could if it is within God’s abilities to make such things — but who knows whether that’s the case? So the principle is probably not a good place to stop when seeking an account of the extent of possibility, but not because it conflicts with Lewis’s analysis (it doesn’t); and not because it presupposes that there is a God (that might be a problem, but it’s clearly not a good principle to stop at even for the theist); and not because we appeal to modality in stating the principle (what God “could” have created). As with Shalkowski’s first objection, so long as the modal concepts being used are themselves amenable to the Lewisian analysis, there is simply no objection to appealing to modal concepts in saying what the extent of possibility is, since this is just a different task entirely from saying what it is to be possible.

The principle of recombination tells us something interesting about the extent of possibility that is neither ruled out by, nor rendered trivial by, Lewis’s analysis of what possibility is. It doesn’t tell us everything there is to know about the extent of what’s possible, of course. And Lewis can tell us other things that tell us more about what’s possible, such as that there are worlds with alien properties, or that there are infinitely many alien properties instantiated across the space of worlds. This still doesn’t tell us everything there is to know about the extent of what’s possible. But who cares? Maybe there’s no way to completely and accurately state the extent of what’s possible; but if so, that should lead only to a certain epistemic humility on our part, not an abandonment of any reductive ambitions we might have had.

Did Lewis think that the task Divers and Melia say can’t be done needed to be done? Not that this matters all that much — if he did, then I simply contend that he was wrong to do so — but it’s an interesting question all the same. Unfortunately, the answer’s not clear. On the one hand, Lewis ends the section of On The Plurality of Worlds that talks about the plenitude of worlds apparently conceding that he hasn’t told us about all the worlds that are out there, and apparently unconcerned by that.25 On the other hand, here’s a string of quotations that makes him sound sympathetic to Divers and Melia.26

I made it part of my modal realism that (1) absolutely every way that a world could possibly be is a way that some world is…. But what does that mean? It seems to mean that the worlds are abundant, and logical space is somehow complete. There are no gaps in logical space. It seems to be a principle of plenitude. But is it really? [Answer: No, because it’s trivial.] … [W]e need a new way to say what (1) … seemed to say: that there are possibilities enough, and no gaps in logical space. To which end I suggest we look to the Humean denial of necessary connections between distinct existences. To express the plenitude of possible worlds, I require a principle of recombination.

Lewis seems here to be taking the task of a principle of plenitude to be to say that logical space (that is, the space of worlds) is complete, and he also seems to be saying that we need a principle of plenitude. But then, he also says that to express the plenitude of worlds he needs the principle of recombination; and immediately afterwards in the book he acknowledges that there are alien worlds outwith its scope, and he doesn’t retract his claim that recombination is a plenitude

24. Which they are. We can understand ‘what’s within God’s powers’ as ‘what God does at some world’, and the principle in question can still be informative. It tells us that God’s a necessary existent, for starters.


4. Hidden modality within Lewis's resources

We've looked so far at arguments that aim to show that Lewis needs resources in addition to those he says he needs for his analysis to be successful, and that such extra resources must be modal in nature. Shalkowski argues that Lewis needs extra modal resources to characterize the modal facts concerning the space of worlds as a whole. Shalkowski and Lycan argue that Lewis needs a notion of ‘world’ that is not merely a maximal mereological sum of spatiotemporally related things but that builds in that the parts of a world are all possible, and that every possible being is a part of some world. Divers and Melia argue that Lewis's analysis needs to entail a complete account of the extent of what worlds there are, and that this is achievable only if it utilizes primitive modality. I've argued that these objections all fail, and that Lewis's reductive ambitions stand so far unthwarted. Now I want to turn to look at whether any of the resources Lewis explicitly appeals to are in fact modal, even if they don’t appear to be.

Before we tackle the questions, we need to have an understanding of what it takes for something to involve modality in a way that rules out reduction. Just what is it for something to be modal? Obviously, the notion of a world is in some sense modal — at least if Lewis’s theory is correct — for Lewis is telling us that what it is to be possible is to be true at one of these things. Consider Lewis’s response to the objection that his worlds have nothing to do with modality, even if there are such things: he says that he’s told you what they have to do with modality by telling you that the modal operators are in fact quantifiers over worlds.27 Of course, then, in that sense worlds are modal. But surely this isn’t enough to show that there’s objectionable modality involved in Lewis’s analysis. After all, it is a condition of success on the reduction that worlds be modal in that sense; so if it is also a condition of failure, then we’re simply ruling out the possibility of reduction.

What we need is an antecedent way to judge what materials can be appropriately appealed to in a reductive base. Of course, if the analysis is correct there will be some sense in which these materials “involve” the notion to be reduced; but unless reduction is in principle impossible, this shouldn’t be enough to worry us. So how do we make an antecedent judgment as to the acceptability or otherwise of something’s being

in the reductive basis for modality? It obviously can’t be anything to do with whether or not we need modal vocabulary to state what resources we’re using that make the resources objectionably modal in character. That makes whether or not we’ve got a reduction hostage to fortune with respect to what linguistic resources are available to us; but surely the success or otherwise of the analysis doesn’t have anything to do with the tools available to us to state the analysis.

If we could make sense of something’s being paradigmatically modal or non-modal then we would have our answer. Josh Parsons defines realism about f as “the doctrine that fs exist, and that fs are not constitutively dependent on the paradigmatic non-fs”. The intention is to mimic Michael Devitt’s definition (realism = existence + mind-independence) but to fix the fact that Devitt’s definition apparently rules out realism about the mental by definition (since minds are trivially mind-dependent). Parsons argues that his definition allows for a realist materialist reduction of the mental, whilst ruling out intuitively silly reductions. He says:

Merely being a physical state is not enough to render a state paradigmatically non-mental. That’s why there’s room to identify a belief with a physical state, while remaining a realist about belief. None the less, certain physical states are paradigmatically non-mental — realism about the mental is not toothless. States of a Blockhead, or of an ordinary bucket of water are paradigmatically non-mental. Materialists normally want to avoid identifying such states with mental states. As they should: if they did, I would regard them as anti-realists about the mental.

It’s certainly overwhelmingly intuitive that a physical brain-state is an appropriate candidate for a realist identification with a mental state in a way that the physical state of a bucket of water is not. But I myself don’t find talk of a state’s being paradigmatically (non-)mental very helpful. I don’t have any grasp on how to decide whether some realm is paradigmatically non-mental other than consulting my intuitions about whether it’s an appropriate candidate for inclusion in the reductive base for the mental. Likewise for the paradigmatically (non-)modal. Now, maybe consulting our intuitions is good enough; maybe, when considering whether we have an appropriate reductive base for the modal, our intuitions as to what’s appropriate are a fine place to stop. But one would hope for some method of guiding or checking these intuitions, so that we could say more about why this attempt at reduction is good rather than simply that it is intuitively so — especially if one’s intuitions are as silent on this matter as my own. For me at least, asking whether the reductive base involves the paradigmatically non-modal does not do the trick.

I think there is little hope for a useful method of determining, in the absence of other considerations, whether something can be appropriately appealed to in the reductive basis for the modal. Instead, I

30. At least, that is the worry. I am unconvinced that it is one, since I think one can resist the claim that minds are trivially mind-dependent, by understanding mind-independence in terms of having no essential connection to mental activity rather than having no modal connection. (See Jenkins [2005].) But this is irrelevant for present purposes: we are not interested in what realism is, but whether we can help ourselves to the idea of something’s being paradigmatically (non-)modal.
32. We could ask whether a notion would be acceptable to one who repudiated all modal concepts whatsoever. But I don’t think this will get any traction on the issue. For we would have to consider those concepts that are acceptable to someone who repudiated all but also only modal concepts, so as not to rule out too much from potential inclusion in a reductive base. For example, Quine repudiated modal notions, but he was equally unhappy with meaning, a priority, and a whole host of notions your modern esoteric metaphysician happily invokes, such as ontological priority, etc. Does that mean such notions can’t be appealed to in a reduction of the modal? Surely not: they don’t get tainted just by association! So to work out what the modal notions are, we would need to consider someone whose disdain was limited to the modal; but of course, we’d only know whether we had such a person in mind if we already had a conception of what it is for a notion to be modal in the first place, and so this doesn’t advance our understanding of that.
suggest we think about the reasons one might want a reduction of the modal, and ask whether a particular attempt at reduction secures the benefits we seek, and not get hung up on whether that reductive base “involves” modality.

There are various reasons we might seek reduction. We might be worried that a concept is not in good standing, and seek a reduction as a means to showing how the concept can be acquired by being built up from simpler concepts that are in good standing, thereby removing doubts about the concept in question. This is one reason you might have for accepting, e.g., the epistemicist account of vagueness.\(^{33}\) We make judgments about what is vague and what is not, but one might have serious concerns about whether this notion is in good standing: talk of “unsettledness” or there being “no fact of the matter” might cause unease in those with conservative tastes in metaphysics and/or logic. If you have doubts about the legitimacy of the concept, supervaluationist accounts of vagueness are unlikely to ease your worries.\(^{34}\) Such accounts make use of the notion of an admissible precisification; but admissibility is presumably a matter of not determinately getting things wrong; and even if indeterminacy is something quite different from vagueness, as some claim,\(^{35}\) it would be odd if you were happy to take this notion as being in good standing if you were sceptical about vagueness.\(^{36}\) And so you might gravitate towards epistemicism, which offers you an account of vagueness in epistemic terms. If those

\(^{33}\) The canonical presentation of which is Williamson (1994).

\(^{34}\) The canonical source being Fine (1975).

\(^{35}\) See, e.g., Barnett (2009).

\(^{36}\) Field (2003) makes this objection against supervaluationism. Of course, some supervaluationists will think they can analyse admissibility without appeal to the notion of (in)determinacy. The jury is still out, I think, on whether that can be successfully done. (Try: Admissibility is fit with patterns of use. But won’t it simply be indeterminate whether some precisifications fit with our patterns of use? And so the admissible precisifications will be the ones that don’t determinately not fit with our patterns of use?) But this needn’t concern us for present purposes: we’re interested just in the dialectical issues, and only need consider how the supervaluationist who does make use of this notion looks from the point of view of the sceptic about vagueness.

Lewis’s Analysis of Modality

epistemic notions are ones which you are happy to take as being in good standing, epistemicism leaves no room for vagueness itself not being in good standing. If this is your reason for seeking a reduction of vagueness then, I suggest, the only question you should be asking of the materials appealed to in the account is whether you are happy to take them in good standing. Whether or not they “involve” vagueness is not something you should worry about. Similarly, if scepticism about modality was your motivation in seeking a reduction of the modal, your only concern should be that the resources you appeal to are ones you are happy with.

You might instead seek a reduction to illuminate the epistemology of that which is to be reduced. This is perhaps one reason to hold an account of laws of nature in terms of regularities of (types of) events. If laws of nature are, e.g., relations of necessitation holding between universals,\(^{37}\) then it’s hard to see how we could tell that something is really a law of nature rather than a mere generalization. But if laws simply are generalizations, discovering what is a law becomes more tractable.\(^{38}\) If this is your reason for seeking reduction, your sole concern should be that the facts about the base be epistemologically tractable.

The third and final motivation I will consider for reduction is the one I find most convincing in the case of modality at least. It is simply that reductions increase parsimony. It’s familiar to take ontological parsimony as a virtue: that if theory T posits fewer (kinds of) things than T* then that is a \textit{pro tanto} reason to prefer T to T*. But ideological parsimony is also important: if theory T requires fewer (kinds of) ideological primitives than T* then that is a \textit{pro tanto} reason to prefer T to T*. So, for example, Ted Sider (ms.) argues for mereological nihilism

\(^{37}\) As in, e.g., Armstrong (1983).

\(^{38}\) Okay, no one holds the simple view that a law merely is a universal regularity. But even on the sophisticated regularity theories (e.g., Lewis [1973], p. 73), it’s clear that there’s a potential epistemological advantage over the “laws as necessitation relations” view. Of course, Armstrong himself claimed the situation is reversed and that the regularity theorist is in fact worse off than the necessitarian epistemologically. (Armstrong [1983], pp. 52–59.) Whether this is no need not concern us here: I’m interested in the dialectical issues.
on the grounds that if the theory is true we need have no mereological notions amongst our primitive ideology, whereas if it is false — and hence there are things with parts — then we need to take some mereological notion as primitive to completely characterize the world.\footnote{The success of this argument depends, of course, on the nihilist’s opponent's not being able to give a complete description of reality without invoking primitive mereological notions. See Barnes (ms.) for an attempt to describe a gunky world (a world where everything has proper parts) without invoking any primitive mereological notions, and hence to undermine Sider’s argument.}{39} The thought is that the extent of the primitive ideology we need to say how reality is, is a reflection of how complicated the metaphysical structure of reality is: and just as theories that posit a less extravagant ontology are more virtuous, so are theories that posit a less extravagant account of the structure of reality; hence, ideological parsimony is a theoretical virtue as much as ontological parsimony.

And so we may be motivated to seek a reduction of the modal on the grounds of ideological parsimony. As Lewis says, you pay for an improvement in ideology with the coin of ontology:\footnote{Lewis (1986), p. 4.}{40} admitting extra things (all the individuals that make up all the worlds) allows us to make do with fewer primitive resources in giving a complete description of reality. Most obviously, there’s quantitative ideological parsimony: the Lewisian needn’t take any of possibility, contingency, necessity, etc. as primitive, whereas the non-reductivist needs to take at least one such notion as primitive. But we also might claim, depending on our other metaphysical commitments, qualitative ideological parsimony: that reducing the modal notions is part of a general metaphysical project of reducing ideology of a certain kind. Sider, for example, sees primitive modality and primitive tense as on a par: both are to take as primitive notions which “point beyond” themselves (by giving us the resources not to say how things are, but merely how they were or could be).\footnote{Sider (2003), p. 185.}{41} If you agree with Sider that modality and tense are of a kind in this respect then you have a motivation for pursuing a reduction of modality alongside a reduction of tense to secure this qualitative ideological parsimony.\footnote{Sider also thinks there’s something suspicious about these notions that point beyond themselves, and so as well as being worried about the good standing of a particular notion, we might also have worries about the good standing of kinds of notions. In general, the three reasons for reduction will often interact: we might worry that a notion is not in good standing because we’re worried about the epistemology; or we might think that some notions are of a kind, and hence that reducing them all would be qualitatively ideologically parsimonious, because we have the same good-standing worry about each of those notions; etc.}{42} But if we need to take \( \Psi \) as primitive anyway, then I can claim an advantage over those who in addition take \( \Phi \) as primitive. And so in the case of Lewis’s reduction of the

Lewis’s Analysis of Modality

motivation for pursuing a reduction of modality alongside a reduction of tense to secure this qualitative ideological parsimony.

If parsimony is what motivates you to seek a reduction then our question should simply be whether what is in the proposed reductive base are resources that we need anyway. If I want an analysis of \( \Phi \) in terms of \( \Psi \) on the grounds of parsimony, then \( \Psi \) had better be something I need to appeal to \textit{whether or not} I accept the analysis; otherwise I haven’t increased my ideological parsimony, merely swapped one bit of primitive ideology for another.\footnote{3. Unless we can make sense of weighting the cost of different ideological primitives, and say that \( \Phi \) is more costly than \( \Psi \); but let’s ignore this complication. In fact, I think this does make sense: not all ideology is born equal. But of course, any judgments we make about some ideology’s being more costly than an alternative are going to be contestable. Whereas when we have a case of dominance — theory \( T^* \) uses only ideology that \( T \) uses, but not as much — then there’s a clear case for \( T^* \) being more ideologically parsimonious: no need to trade intuitions about what ideology is better! That’s the situation I think the Lewisian is in with respect to the modal primitivist, so there’s a dominance argument for Lewisian realism. That’s not to say that it will always be clear whether or not we have a case of dominance. Consider the theory that composition is identity. One might argue for this by appeal to ideological parsimony: why have mereological notions when you can make do with identity, which we all need anyway? But is the notion of identity that the composition-as-identity theorist makes use of the same notion of identity we need anyway? They think that identity can be many-one as well as one-one: is it that they have an unorthodox view about the bit of ideology we all use anyway, or is it that they’ve replaced our bog-standard notion of identity with a new notion, albeit similar in certain respects? I don’t know how to answer that question, so don’t know whether there’s a dominance argument for composition being identity.}{43}

If parsimony is what motivates you to seek a reduction then our question should simply be whether what is in the proposed reductive base are resources that we need anyway. If I want an analysis of \( \Phi \) in terms of \( \Psi \) on the grounds of parsimony, then \( \Psi \) had better be something I need to appeal to \textit{whether or not} I accept the analysis; otherwise I haven’t increased my ideological parsimony, merely swapped one bit of primitive ideology for another.\footnote{Sider also thinks there’s something suspicious about these notions that point beyond themselves, and so as well as being worried about the good standing of a particular notion, we might also have worries about the good standing of kinds of notions. In general, the three reasons for reduction will often interact: we might worry that a notion is not in good standing because we’re worried about the epistemology; or we might think that some notions are of a kind, and hence that reducing them all would be qualitatively ideologically parsimonious, because we have the same good-standing worry about each of those notions; etc.}{42} But if we need to take \( \Psi \) as primitive anyway, then I can claim an advantage over those who in addition take \( \Phi \) as primitive. And so in the case of Lewis’s reduction of the
ROSS P. CAMERON

Lewis’s Analysis of Modality

modal, don’t ask whether the resources he appeals to “involve” modality: ask whether they are resources we need anyway. If they are, then his theory offers an improvement in ideology and is beneficial in that respect; if not, then we lose at least this reason to accept his account.

So, for example, one might object that Lewis uses a possibilist quantifier when stating his modal realism. Does that mean that when he uses the quantifier he’s ‘involving’ modality in his theory in some objectionable way? Forget such questions, I say. If parsimony is prompting your interest in reduction, ask instead whether such resources are ones we need anyway. Answer: yes: they are. Lewis is just using the unrestricted quantifier, and we all need that. Lewis has a possibilist quantifier not because he has some special new bit of ideology, but because he thinks the domain of the quantifier we all make use of includes mere possibilia.

Similarly, Lewis needs mereology to generate the existence of the worlds — or at least plural logic to be able to talk about the things that world (see fn. 8). One might worry that this brings with it an essentialist commitment concerning the essences of sums or pluralities, and hence this is to “involve” modality in an objectionable way. Again, I think such questions should simply be abandoned. If parsimony is your goal, don’t care about whether mereology or plural logic “involves” modality in any way; just ask whether you need it anyway. Odds are you do, since you either need to talk about complex objects like tables or about collections of simples arranged table-wise (or both). Either way, you should appreciate Lewis’s offer to not have to talk about what could be the case in addition.45

Compare the situation of Lewis to that of Fine, who offers us an account of modality in terms of essence: what’s necessary is what’s “true in virtue of the nature of all objects whatever.” Is this reductive? Are the essentialist notions that Fine is appealing to modal or not? We tend to think of the essence/accident distinction as a modal one; but on the other hand, Fine is trying to get us to reject the traditional account of this distinction in modal terms, so if he’s right, perhaps it’s a non-modal notion after all. So does Fine’s account of what necessity is involve modality or not? At worst this is a meaningless question, at best it’s an irrelevant one, say I. All that matters are the benefits the account offers. And if parsimony is your interest, it’s clear that Fine offers a more parsimonious view than those that take both modal and essentialist

45. We needn’t worry about Lewis’s needing extra ideology to describe the non-actual worlds. Whatever resources Lewis needs to describe the non-actual worlds, the modal primitivist needs to be able to describe what could have been. We need ideology enough to be able to give a complete description of reality, including the facts about what’s possible. (If the mereological nihilist thought merely that as a matter of fact nothing had proper parts, she wouldn’t have a parsimony advantage, for she’d still need the resources to describe those possible situations in which complex objects existed. To get rid of mereological ideology, you need to hold that the world couldn’t be structured by the parthood relation.) For Lewis, the complete description of reality is the complete description of what there is; but for the primitivist the complete description of reality includes a description of what could have been but isn’t. So provided she agrees with Lewis that each of his worlds corresponds to a possibility, she will need ideology enough to describe the circumstances represented by those worlds just as Lewis does. And the primitivist does tend to agree that each Lewis world could have obtained: the complaint tends to be that Lewis doesn’t recognize enough possibilities (by omitting, e.g., the possibility of island universes) rather than that he admits too many. If some primitivist thinks that some Lewis worlds couldn’t have obtained, she doesn’t think this quasiprimitivist, and the theory we should compare her theory to is Lewisian realism with those worlds missing.

little traction on the debate. Instead, we should focus on the reasons for seeking reduction, and ask simply whether inclusion of something in the reductive base advances or frustrates those ambitions.

In Lewis’s case, I think the parsimony argument for Lewisian realism is strong (as is the case for a demonstration of good-standingness against the modal sceptic): the resources needed to state Lewis’s picture of reality are ones we plausibly need in order to say how reality is even if Lewisian realism is false, and so there is a pro tanto reason for not allowing ourselves modal resources in addition. That’s not to say that we should be Lewisian realists, of course — the reason is just pro tanto. But we should at least agree that the theory succeeds in its reductive ambitions: namely, to improve our ideological commitments.49

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47. Williamson (2005), (2007). Williamson is in fact more concerned with the epistemic priority of counterfactual facts over facts about possibility and necessity, rather than with giving us an account of what necessity is; but we’ll consider the latter program.


49. Thanks to Elizabeth Barnes, Louis deRosset, John Divers, Jason Turner, Robbie Williams, and Richard Woodward for helpful comments.
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