

The Methodology of *Modal Logic as Metaphysics*

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Timothy Williamson's *Modal Logic as Metaphysics* is, among much else, a detailed and complex defense of the metaphysical view he calls *necessitism*, the view that necessarily everything necessarily exists (is something), that although it may be a contingent matter *how* things are, *what* things there are is entirely a matter of necessity. The majority of contemporary modal metaphysicians reject this view; they are *contingentists*. Williamson examines the case for necessitism with great thoroughness, and with a distinctive methodology captured in slogan form by the book's title. The book is an impressive achievement, and will have an impact on the shape of future debate.

Necessitism appears to fly in the face of common opinion. Surely—or so I think—if my parents had never met, then I would not have existed. Surely—or so I think—I could have had a brother (although I actually do not), without it being the case that there (actually) exists something that could have been my brother. Indeed, on the familiar assumption that one's genetic makeup is part of one's essence, necessitism leads to an ontological explosion of my possible brothers, all of whom (actually) exist. A common response to necessitism is that the conflict with common opinion is so great that it can be rejected out of hand.¹ Williamson would disagree. A possible person is not a person, not something made of flesh and blood; a possible person is a non-concrete object that is possibly concrete. Common opinion, arguably, does not distinguish between concrete existence and existence *tout court*. Perhaps the common opinion that I could have failed to exist is respected well enough if I could have failed to be anything *concrete*.

¹ Thus Robert Stalnaker gives Williamson the incredulous stare. (*Mere Possibilities*, Princeton, 2012, 50.)

Perhaps common opinion is respected well enough as long as there is no ontological explosion of *concrete* objects. In any case, Williamson holds that the debate between necessitism and contingentism must be decided on *theoretical* grounds, through a careful weighing of the costs and benefits of accepting either view.

How, one might wonder, does Williamson's approach to defending necessitism compare with David Lewis's approach to defending modal realism in *On the Plurality of Worlds*? Both employ a broadly Quinean methodology that evaluates metaphysical theories of modality in part by applying pragmatic criteria such as fruitfulness, simplicity, and elegance. Both hold that the evaluations must be made by appropriately trained philosophers, not by laymen—or untrained philosophers—consulting their untutored judgments. And both hold that theoretical benefits may outweigh the costs of accepting a controversial ontology. But there the similarities end. For Williamson, the costs and benefits are to be applied directly to modal logics and their accompanying semantics. The question is whether a necessitist modal logic is, all things considered, more beneficial than any contingentist modal logic. To answer this question, Williamson surveys and critically evaluates a vast array of formulations of quantified modal logic. Lewis's view of the relation between modal metaphysics and modal logic couldn't be more different. After noting some difficulties that arise in attempting to provide a simple, uniform contingentist semantics for a modal language, he writes:

If this language of boxes and diamonds proves to be a clumsy instrument for talking about matters of essence and potentiality, let it go hang. Use the resources of modal realism *directly* to say what it would mean for Humphrey to be essentially human, or to exist contingently. (*On the Plurality of Worlds*, Blackwell, 1986, 12–3)

For Lewis, debates in the metaphysics of modality, whether over necessitism or some other doctrine, should be carried out in an extensional language with quantifiers over possible worlds and possibilia. I return to this below.

When I first read the title of Williamson's book, a number of worries immediately sprang to mind. Some of these worries turned out not to be serious given the way that Williamson practices his methodology; but others persisted through a close reading of the book. In what follows, I discuss a few of these worries in rather broad strokes. In the end, I wonder whether modal logic as metaphysics may be more limited in what it can accomplish than Williamson allows. For one thing, its target audience is limited: only *modalists* should think that the benefits of a necessitist over a contingentist modal logic give reason to reject contingentism; and I think, contrary to Williamson, that contingentists need not be modalists. For another thing, the

dispute between necessitists and contingentists depends on fundamental metaphysical disputes, for example about grounding and truthmaking, that are left out of account by Williamson's methodology. Whether that is a strength or a weakness, however, is open to legitimate debate.

An initial worry is that a modal logic consists of *validities*, either characterized syntactically in terms of axioms and rules of inference, or semantically in terms of model structures. A metaphysical theory of modality, in contrast, consists of *truths*. If metaphysical theories are to be evaluated by evaluating modal logics, we need a connecting bridge. This Williamson builds as follows (92–118). First, for any valid formula of a modal logic, we form the *universal generalization* of the formula by uniformly replacing all non-logical constants of the formula by variables of the appropriate syntactic category, and then prefixing appropriate universal quantifiers. The modal operators count as “logical” here, fixedly interpreted as metaphysical modality. This process transforms the modal logic into a higher-order theory whose sentences make highly general claims involving metaphysical modality, and are evaluable for truth or falsity. Second, say that a resulting universal generalization is *metaphysically universal* just in case it is true on its intended interpretation (with all quantifiers unrestricted). What we seek, then, is a modal logic which is such that all universal generalizations of its validities are metaphysically universal. Moreover, on the hypothesis that there is a uniquely intended model structure, the worlds of which, in some sense, are the “genuine” worlds (95–96), the metaphysically universal statements—that is, the statements of the true theory of metaphysical modality—are the universal generalizations of the validities of the intended model structure. (Perhaps this hypothesis is justified by its fruitfulness; Williamson doesn't say.) With this bridge in place, necessitist and contingentist metaphysical theories correspond to different modal logics, and we can evaluate the theories by evaluating the associated modal logics.²

Still, one might worry that the criteria that we use to evaluate a set of statements *qua* modal logic are different from the criteria we use to evaluate that same set of statements *qua* metaphysical theory. To take one example: modal logics are often evaluated with respect to their expressive power, even when the expressive power of the logic is limited, not by any metaphysical failing, but by a lack of logical resources. Such evaluations, however, should be irrelevant to metaphysical theories. This worry might seem especially acute because one of the most powerful arguments Williamson gives against contingentism involves the expressive limitations of contingentist modal

² There is a *prima facie* conflict between this talk of an intended model structure and Williamson's contention that many parties to the debate (himself included, *qua* modalist) must treat the semantics in an instrumental way; see below. Williamson addresses this on pp. 409–10.

logics (345–352). Williamson, however, is sensitive to this worry. In arguing that the contingentist lacks the means to interpret necessitist discourse, he allows the contingentist generous resources such as indexed actuality operators or Vlach’s dagger operators (325); and he argues that even infinitary logical operators would not allay the contingentist’s difficulty (352–365). If contingentists do indeed lack the means to interpret necessitist discourse, as Williamson thinks, it is not for lack of *logical* resources; it is due to a deficient ontology.

Another worry about Williamson’s methodology is this. When we evaluate necessitist and contingentist modal logics, we are asking in part which logic allows of a simpler and more elegant semantics, with simpler and more elegant definitions and rules. But often such semantical considerations do not seem at all relevant to the truth or falsity of the corresponding metaphysical theories. They raise issues as to how best to formulate the theory, not issues with the theory’s content. For example, it is often thought to be semantically and logically advantageous for all functors to express functions that are totally defined, that provide a value for each of its arguments. This has been given as a reason to introduce a “null individual” into mereology, an individual that purportedly is a part of every individual. It allows the intersection operation to be defined for any pair of individuals, even when the individuals do not overlap. Carnap (in *Meaning and Necessity*) made use of such a null individual to serve as the denotation of any definite description that lacked unique reference, noting that this also simplified the inference rules for quantifiers. Here Carnap was taking his lead from Frege who held (in “On Sense and Reference”) that failure of reference for definite descriptions was just as much a defect in a logically perfect language as was ambiguity. But, surely, taking such a null individual with ontological seriousness is absurd, no matter what semantical or logical simplification results from the posit. Now, my point isn’t that someone with Williamson’s methodology will be stuck with a null individual: there are numerous considerations that Williamson could allow to outweigh the supposed benefits. My point rather is that the simplicity of a metaphysical theory’s semantics, by itself, should not count at all in evaluating the theory for truth or falsity. (Williamson’s methodology could be defended, I suppose, in a Quinean spirit by denying that considerations of a theory’s semantics can ever be severed from consideration of the theory’s content; but I find that implausible.)

Williamson’s methodology of evaluating metaphysical theories by evaluating their associated modal logics is at risk, then, of introducing irrelevant concerns. That raises the question: just what role does the framework of modal logic play in Williamson’s arguments? Indeed, as Williamson is well aware (e.g., 92–3), there is controversy over whether modal logic, with the modality metaphysical, should count as logic at all. When characterizing the

“logically valid” formulae, the modal operators are treated as logical constants whose interpretation is not allowed to vary. But in that sense we could also speak of a “logic” of belief, or a “logic” of familial relations; and each such “logic” would have its associated “validities”. No doubt, the issue is largely terminological, and the term ‘modal logic’ is well established. It might matter, however, if any of Williamson’s arguments rested upon logic having some special authority that non-logical theories lack. He does write: “to mess with the modal or temporal logic of identity in order to avoid ontological inflation would be a lapse of methodological good taste, or good sense, for it means giving more weight to ontology than to the vastly better developed and more successful discipline of logic.” (26) It is not entirely clear to me how the success of logic generally carries over to any particular dispute in modal logic, including disputes over the interaction between modality and identity. In any case, it is clear from context that the authority Williamson gives to modal logic here is just the authority that would accrue to any theory that scores highly on Quinean criteria of theory choice; traditional views of logic as having some special status as a priori, or analytic, or foundational, are rejected by Williamson.

What role, then, does modal logic play in Williamson’s account? First, it provides a rigorous framework for clarifying the modal theses under discussion, and for discovering their logical interrelations. It would be difficult indeed for the sort of metaphysical investigation that Williamson engages in to be carried out entirely in ordinary language, even if precisified. Second, it forces the debate between necessitists and contingentists to be focused on formulations of those theories within a modal language. This turns out to be crucial to Williamson’s chief arguments against contingentism, which depend on expressive inadequacies of a contingentist modal logic. If the debate is carried out instead within an extensional language with quantifiers over possibilities, these expressive inadequacies become moot. In what follows, I ask whether and how this restriction to modal languages can be justified.

Modalism, as characterized by Kit Fine, is the view that “the ordinary modal idioms (necessarily, possibly) are primitive.”³ It follows, presumably, that the truth or falsity of statements containing these modal idioms cannot be explained in terms of quantification over worlds. Anti-modalism, on the contrary, holds that the truth or falsity of these statements can be explained in terms of worlds; for example, if ‘possibly p ’ is true, that is because, for some world w , p is true at w . As I understand it, the anti-modalist need not reject all primitive modality (whatever exactly that means): perhaps the notion of world is modal; perhaps the operator ‘at w ’ is modal. But the

³ “Prior on the Construction of Possible Worlds and Instants,” in *Modality and Tense*, Oxford, 2005, 133.

anti-modalist holds that a language that quantifies over worlds is explanatorily more fundamental than a language with boxes and diamonds. Now, it seems to me that a contingentist anti-modalist should think that Williamson's Quinean methodology is misapplied. Only when metaphysical theories are couched within a fundamental language should the Quinean methodology be expected to yield meaningful results. This doesn't, by itself, cast any doubt on Williamson's arguments against a contingentist *modalist*. Indeed, it would be no mean feat to establish that the only viable contingentism is anti-modalist. But it does, I think, limit the scope of Williamson's arguments to something less than what he intended.

Williamson counters this claim that the scope of his argument is limited in two independent ways. Most centrally, he argues that "contingentism is inconsistent with central forms of anti-modalism" (334). That argument only gets off the ground because earlier in the book Williamson had claimed that Lewis's modal realism is a necessitist theory (16–7). That would have been news to Lewis, who certainly took himself to be a contingentist. For Lewis, a necessitist claim such as 'everything is necessarily something', being a *de re* modal claim, is to be interpreted using counterpart theory; it is equivalent to 'everything has a counterpart in every world'. And that latter claim is something that Lewis would deny (at least relative to any ordinary context). Williamson considers but oddly refuses to allow the counterpart-theoretic interpretation. He writes:

So, although usual, it is not mandatory for the implicit quantifiers over worlds to trigger a counterpart-theoretic treatment of free variables in their scope. Thus modal realism should permit a reading of the modal statement of necessitism, 'Necessarily everything is necessarily something', with no explicit quantifier restricted and no counterpart-theoretic treatment of implicit free variables. (17)

Under such a reading, the two occurrences of 'necessarily' are redundant, and the necessitist claim is equivalent to 'everything is something'. Modal realism, he thus claims, makes necessitism trivially true. But that modal realism *permits* this trivial reading is not to the point. It is only the counterpart-theoretic reading, Lewis would hold, that is relevant to the debate between necessitists and contingentists.

Part of what is going on, I suspect, is that Williamson simply does not take counterpart theory seriously as an interpretation of *de re* modality.⁴ I suspect that Williamson would treat Lewis's claim to be a contingentist much like he treats Berkeley's claim to accept material objects (406, 422): it is a failed attempt to speak with the vulgar. This raises

⁴ The book contains some discussion of counterpart-theoretic semantics in connection with a critical assessment of Stalnaker's logical views (176–7; see also 214–216).

difficult questions about interpretation between theories based on radically different worldviews. Perhaps, although Lewis is correct, by his own lights, to call himself a contingentist, Williamson is correct, by his lights, to call Lewis a necessitist. Interpretation need not be a two-way street. In any case, Williamson is not much concerned that modal realism—whether labeled ‘necessitist’ or ‘contingentist’—is outside the scope of his arguments.

Williamson does, however, intend his arguments to target the range of contingentist views that Divers⁵ calls “actualist realism” (and that Lewis (*op. cit.*), more tendentiously, calls “ersatz modal realism”). Actualist realist views posit or construct entities that, arguably, can play many of the roles that concrete possibilities play for the modal realist. These views do not eliminate—and typically have no ambition to eliminate—all primitive modality. Nonetheless, they do take our ordinary modal idioms (necessarily, possibly) to be quantifiers over (what they take to be) possible worlds. And taking these idioms to be quantifiers does explanatory work, for example, in accounting for familiar patterns of logical inference. These actualist realist views, typically, have not been classified as “modalist”.

It would be fruitless to enter into a dispute over whether actualist realist views are *properly* labeled “modalist”. What matters is Williamson’s accompanying claim that “the tension between contingentism and anti-modalism makes a first-order language with quantifiers over worlds but no modal operators a hopelessly misleading medium for the debate between contingentism and necessitism” (334). For that is the claim that Williamson needs to justify his methodology of modal logic as metaphysics, with its focus on modal languages. And that claim, it seems, is based primarily on an earlier argument (from §3.6) that “contingentism can’t take possible worlds semantics at face value” (334). Williamson argues for this by arguing that “if the model theory is treated in a fully realist way, it trivially validates BF” (139). (BF, the Barcan Formula, entails the necessitist claim that everything necessarily exists.)

It is not clear to me, however, how Williamson goes from “not fully realist” to: not realist in a way that makes giving truth conditions relative to worlds lack explanatory force. No view, it seems to me, treats the model theory in a fully realist way. Lewis’s modal realism does not forfeit its anti-modalist credentials by its treatment of ‘exists at’: a world *represents* that an individual exists at it by having a counterpart of that individual as a part. With respect to actualist realist views, the situation is somewhat murkier (due in part to murkiness in the notion of explanatory priority). But to the extent that an actualist realist can “factor out” the representational aspects of the model theory from its realist core, the model theory with its quantification over possibilities may

⁵ John Divers, *Possible Worlds*, Routledge, 2002.

still have explanatory force.⁶ Such contingentists are not compelled to carry out the debate in the language of boxes and diamonds. They can rise up and say: “Let it go hang!”

There is a second way that Williamson counters the claim that his case for necessitism is limited in scope. In a methodological afterward, Williamson argues that it is appropriate to apply abductive criteria such as simplicity and elegance in comparing the costs and benefits of theories, whether or not those theories are couched within a metaphysically fundamental language. He supports this by noting that we often apply such criteria in assessing theories in the special sciences, regardless of whether those theories are reducible to more fundamental theories. That no doubt is the case; but only, I would claim, because we do not have access to the reduction, and so have no better alternative. The case at hand is different. The anti-modalist who is a realist about possibilia can easily carry out the relevant reduction, thereby embedding the necessitist or contingentist claims within what they take to be a more inclusive theory. To apply abductive criteria to a fragment of total theory when a more inclusive theory is available risks getting erroneous results. That, indeed, is what the anti-modalist thinks happens in this case. For Williamson’s chief arguments having to do with limitations of the contingentist view do not hold up in the wider setting where the contingentist can quantify directly over possibilia.

A final observation. Most contemporary metaphysicians approach debates in ontology rather differently than Williamson. Even if they allow some role to the sort of logical and semantical considerations that dominate Williamson’s discussion, it is their commitment to fundamental metaphysical theses that tends to play the decisive role. For example, necessitism, with its positing of non-concrete possible objects, might be rejected on the grounds that it violates a general principle that the modal supervenes on the non-modal: a possible mountain and a possible river don’t differ, it seems, in any non-modal, “categorical” properties; their difference is brutally modal. Williamson, however, leaves consideration of such fundamental metaphysical principles out of account in making his case for necessitism. That is not to say that he leaves their consideration out the book. In a final chapter, tellingly entitled “Consequences of Necessitism,” he engages in a substantial critical assessment of the idea that the modal supervenes on the non-modal (§8.2). (Some contemporary metaphysicians may think: “At last, now we are getting to the metaphysical heart of the matter!”) How does Williamson justify leaving such fundamental metaphysical issues out of the main debate?

⁶ I think different verdicts should attach to different actualist realist views. Stalnaker discusses to what extent his own view can be said to be “realist” with respect to possible-worlds semantics in *op. cit.*, 32–42. Williamson critically assesses Stalnaker’s view in §4.9.

For Williamson, claims such as that the modal supervenes on the non-modal belong to speculative metaphysics. Such metaphysics, however legitimate as an enterprise, is too uncertain to play a role in the debate between necessitism and contingentism. Modal logic as metaphysics is methodologically on firmer ground, he thinks, able to achieve results where the practitioners of “deep” metaphysics can only spin their wheels. It is this shift away from speculative metaphysics and towards the firmer ground of logic and semantics that sets Williamson’s methodology apart from the practice of most contemporary metaphysicians.