Routledge
Taylor & Francis Group

Reply to Fine

Timothy Williamson

Wykeham Professor of Logic, University of Oxford, Oxford, UK

As should be clear, *Modal Logic as Metaphysics* owes a large debt to Kit Fine's massive contributions to technical aspects of modal metaphysics, though it also takes issue with some of his proposals. In 'Williamson on Fine on Prior on the reduction of possibilist discourse', (Fine 2016), he defends much in his earlier proposals while providing it with a new basis. In this reply, I follow his order of discussion.

1. What is the problem?

Fine's work on modal metaphysics is framed by the dispute between actualism and possibilism. *Modal Logic as Metaphysics* finds that dispute confused, and reframes modal metaphysics in terms of the clearer dispute between contingentism and necessitism. The first section of his paper argues that we should still focus on his original dispute rather than my proposed alternative.

Fine does not deny that necessitism and contingentism are clearer doctrines than actualism and possibilism. The necessitist asserts 'Necessarily everything is necessarily something'; the contingentist denies what the necessitist asserts. In Fine's current formulation, the actualist asserts 'Only actual objects are real' (or perhaps 'Necessarily only actual objects are real'); the possibilist denies what the actualist asserts. The necessitist's assertion and the contingentist's denial can be formulated in the language of first-order modal logic, with the quantifiers read absolutely unrestrictedly and the modal operators read metaphysically. By contrast, 'actual' and 'real' in the actualist's assertion and the possibilist's denial are not to be defined in the language of first-order (or higher-order) modal logic. Instead, Fine treats 'actual' as an undefined term, introduced by examples: Wittgenstein is actual, his children are merely possible. He introduces 'real' differently: to be real is to figure in reality, where the term 'reality' is itself undefined, though to some extent explained by a sketch of the role it is meant to play in metaphysical theorizing (Fine 2009). Fine himself contrasts 'the relatively obscure idioms of actuality and reality (or the like)' with the language of quantified modal logic.

CONTACT Timothy Williamson ✉ timothy.williamson@philosophy.ox.ac.uk

Of course, not even absolutely unrestricted quantification and metaphysical modality are above challenge. Fine himself rejects the former, though not the latter. However, he agrees with me that relevantly similar doctrines can be defined using even weaker resources. For instance, reinterpreting the quantifier as restricted to possibly concrete objects and the modal operator as restricted to physical possibilities preserves the most salient contrasts between contingentism and necessitism. Indeed, Fine's formulations of actualism and possibilism themselves seem to require a quantifier unrestricted at least within reality, since 'Only actual objects are real' is equivalent to 'Everything real is an actual object', where a restriction on 'everything' that excluded some real things would undermine the actualist's intention.

Another apparent difference between the two pairs of doctrines is that whereas contingentism is the contradictory of necessitism, possibilism may be the contrary rather than the contradictory of actualism. For Fine allows that there may be *impossible* objects, in the sense of objects that are not even possibly actual. Consider the formally consistent metaphysical theory that some real things are necessarily actual, some real things are necessarily non-actual, and every real thing is either necessarily actual or necessarily non-actual. That theory is inconsistent with actualism, but it also seems to be inconsistent with possibilism, on any natural understanding of that term. Thus a more general dispute may set actualism against its contradictory rather than against possibilism. However, that does not matter for present purposes.

Fine regards the dispute between necessitism and contingentism as clear enough to be getting on with. His principal objection to focusing on it is simply that he takes it to be obvious which side is right: necessitism. Indeed, he writes: '*anyone* in their right mind should accept necessitism' and 'the issue of necessitism vs. contingentism is a non-issue and any right-minded philosopher should accept necessitism without further ado'. To back up these claims, Fine gives an example of counting the possible knives that could but never will be made from three given blades and three given handles (I use a similar example in favour of necessitism in Williamson 2000). He takes it as just evidently true that there are nine, as the necessitist says, not zero, as the contingentist says; for the contingentist to postulate a non-literal sense of the question to which they can regard the answer 'nine' as correct 'is simply to put bad linguistics at the service of bad philosophy'. Naturally, I feel some sympathy with Fine here, and he is under no obligation to spend more of his time on contingentism. But his impatient dismissal does not make the issue go away.

Fine does not quite say that all those in their right minds accept necessitism, just that they *should* do so; but what if they don't? For instance, Robert Stalnaker presumably counts as in his right mind. He rejects necessitism and develops a contingentist alternative with a clear understanding of what is at issue (Stalnaker 2012). I regard him as wrong, but not as confused. One might hope to do better than just telling Stalnaker to 'accept necessitism without further ado'. After all,

many contingentists regard themselves as in a position to dismiss necessitism without further ado, for example on the grounds that it is just evidently true that the table is only contingently something. Conducted thus, the dispute between necessitism and contingentism faces deadlock. In logic, metaphysics and any other serious inquiry, we need methods that enable us to work through clashing senses of the obvious with some hope in the long run of an adequate resolution. Granted, most of what seems obvious to us is indeed true, but a methodology that crashes every time something false seems obvious is insufficiently robust for our purposes. *Modal Logic as Metaphysics* applies and recommends an abductive methodology for first principles of logic; it enlarges the evidence base on which we choose between them so that we can finesse deadlock on a few individual data points. That resembles what happens in natural science: if we cannot agree whether the outcome of a particular experiment refutes a theory, we can test the theory in other ways.

Whatever Fine's individual preferences, those interested in modal metaphysics have collectively to engage with the issue between necessitism and contingentism. Moreover, since it concerns a central choice-point in how we reason about modal matters, with ramifying consequences in many directions, it has to take a fundamental role in modal metaphysics. In comparison, Fine's issue between actualism and possibilism looks secondary, because he in effect sets up the options as two types of necessitism. For he explains the term 'actual' through a contrast between two kinds of thing: those like Wittgenstein (the actual things) and those like Wittgenstein's (merely possible) children (the non-actual things). But it is the necessitist who postulates things like Wittgenstein's merely possible children. From a contingentist perspective, there are no such things, so no contrast with which to explain 'actual'.

Once we understand the dispute between actualism and possibilism as a dispute between rival forms of necessitism, is it clear enough to be productive? Can we fruitfully investigate whether only actual objects are real? I do not regard the sentence 'Only actual objects are real', used in Fine's way, as meaningless. It does not take much to avoid utter meaninglessness in a natural language, and Fine's explanations of 'actual' and 'real' achieve that much. But I am sceptical as to how much more than that they achieve, especially in the case of 'real'. It is not that theorists are obliged to define their new theoretical vocabulary in more basic terms; I agree with Fine that it would be unfair to demand such a reductive definition of 'real'. Sometimes a new theory introduces a valuable distinction we could not previously make. But the theory needs to be a good one, to constrain the use of the term enough to be productive. In the case of 'real', I see no such theory. There are links with other vague phrases of the sort that hand-waving metaphysicians like to gesture with, such as 'consist in', 'nothing more than' and 'account for', which are used in characterizing the relation between the unreal and the real, but such links do not amount to a serious theory. In this respect, 'real' (in Fine's sense) compares poorly with 'necessary' (in the metaphysical sense): our

current theories of necessity are multiply constrained by logic, common sense and natural science (Williamson 2007, 2013, 2016) to a much greater extent than are our current theories of reality. If that sounds strange, that is because we tend to hear 'reality' in something like its ordinary sense, in which the primary contrast is with 'appearance', 'fiction' and the like. *Of course* natural science tells us lots about what *is* as opposed to merely *appearing* to be, but that is not the contrast Fine intends with his special metaphysical sense of 'real'. For in the latter sense, something can *be*, not just appear to be, yet not *really* be. That is why 'reality' talk in this special metaphysical sense is so much less constrained than it sounds.

I will not insist here on scepticism about the metaphysical sense of 'real'. As elsewhere, the proper test is an abductive one. If 'real' in that sense is latching onto something profoundly important, then we can expect it sooner or later to figure in powerful theories whose success it would be curmudgeonly to dispute. They might be like theories of natural or social science, only more abstract; they might be more like theories of logic, only more concrete; for present purposes it does not matter which. If such a theory does emerge, it will go far towards vindicating the importance of the dispute between actualism and possibilism as Fine understands it. At the time of writing, I see no such theory on the horizon.

I now turn to the question of mappings between contingentist and necessitist discourse (Williamson 2013, chapter 7), and between actualist and possibilist discourse. In early discussions of actualism and possibilism, such mappings were presented as *translations* between the actualist's language and the possibilist's language. The background assumption was that in effect the actualist and the possibilist spoke different languages, albeit homophonic ones: they assigned different meanings to the quantifiers, and correspondingly different meanings to the sentences in which they occurred, and were speaking past each other when they appeared to disagree. The standard of correctness for the translations was that a sentence in the actualist's language should be mapped to a sentence in the possibilist's language with the same meaning, or at least the same coarse-grained truth condition, and *vice versa*. *Modal Logic as Metaphysics* argues against such a conception of the debate between contingentism and necessitism. My contingentist and my necessitist use a common language with shared meanings: in particular, they both use absolutely unrestricted quantifiers, as is the norm in metaphysics. They know what they are doing; there is no misunderstanding between them. Their apparent theoretical disagreement is just what it seems. No translation is needed, and no mapping from a sentence expressing contingentism to a sentence compatible with necessitism or *vice versa* is an adequate translation. As far as I understand the debate between actualism and possibilism in Fine's sense, it conforms to a parallel argument. The actualist and the possibilist assign the same meanings to 'actual', 'real', and the quantifiers, but may still disagree as to what is real. I will not labour these points here, because Fine does not argue that either debate depends on meaning variance between the two sides.

In some cases, necessitist discourse cannot be usefully mapped into contingentist discourse, or *vice versa*. For instance, an idiosyncratic necessitist might claim that even if a river were not spatiotemporally located, it would still be ugly or beautiful in ways that do not supervene on anything else. Few contingentists would wish to capture those alleged distinctions in their own terms. Conversely, an idiosyncratic contingentist might claim that a number exists or not contingently in ways that do not supervene on anything else. Few necessitists would wish to capture those alleged distinctions in their own terms. However, those are unusual cases. More typically, each side regards the other's discourse not as capricious but as marking genuine distinctions, despite misdescribing them as a result of seeing them through the distorting lens of false metaphysical assumptions — like someone whose literal use of the sentences 'The gods are angry' and 'The gods are not angry' marks but misdescribes the distinction between situations in which there is thunder and situations in which there is no thunder. Consequently, each side wishes to capture in its own terms the genuine distinctions the other's discourse marks, purifying them of the misdescriptions.

To make this idea more precise, *Modal Logic as Metaphysics* sketched a neutral sublanguage of the necessitist and contingentist's shared language of quantified modal logic. Its sentences are neutral in the sense that they do not raise any of the issues in dispute between the necessitist and the contingentist. To start with contingentist discourse, the contingentist's metaphysical theory is CON. The contingentist *marks a distinction* by the sentences A and B if and only if they are not equivalent given CON, in other words, the biconditional $A \leftrightarrow B$ is not a logical consequence of CON. To capture this distinction in neutral terms, we want to map A and B to neutral sentences $(A)^{con}$ and $(B)^{con}$, respectively, which are not logically equivalent. By contraposition, if $(A)^{con}$ and $(B)^{con}$ are logically equivalent, then $A \leftrightarrow B$ should be a logical consequence of CON:

(F1) If $\vDash (A)^{con} \leftrightarrow (B)^{con}$ then CON $\vDash A \leftrightarrow B$

If B is already neutral, then $(B)^{con}$ should just be equivalent to B, for there is no purifying to be done. Since $(A)^{con}$ is neutral, this implies:

(F2) $\vDash ((A)^{con})^{con} \leftrightarrow (A)^{con}$

(Compare proposition 1.3 at Williamson 2013, 371.) But from F1 and F2 we can deduce F3 by substituting $(A)^{con}$ for A and A for B in F1:

(F3) CON $\vDash (A)^{con} \leftrightarrow A$

(Compare proposition 1.8 at Williamson 2013, 372.) Conversely, we can derive F1 from two instances of F3. Thus, for each sentence of the language, the mapping should give us a neutral sentence equivalent to it within the contingentist's metaphysical theory.

There is a parallel line of thought for necessitist discourse. The necessitist's metaphysical theory is NEC. The necessitist *marks a distinction* by the sentences

A and B if and only if the biconditional $A \leftrightarrow B$ is not a logical consequence of NEC. To capture this distinction in neutral terms, we want to map A and B to neutral sentences $(A)^{nec}$ and $(B)^{nec}$, respectively, which are not logically equivalent; hence:

(F4)   If $\vDash (A)^{nec} \leftrightarrow (B)^{nec}$ then NEC $\vDash A \leftrightarrow B$

If B is already neutral, then $(B)^{nec}$ should just be equivalent to B, for there is no purifying to be done. Since $(A)^{nec}$ is neutral, this implies:

(F5) $\vDash ((A)^{nec})^{nec} \leftrightarrow (A)^{nec}$

But from F4 and F5 we can deduce F6 by substituting $(A)^{nec}$ for A and A for B in F4:

(F6)   NEC $\vDash (A)^{nec} \leftrightarrow A$

(Compare proposition 1.21 at Williamson 2013, 373.) Conversely, we can derive F4 from two instances of F6. Thus, for each sentence of the language, the mapping should give us a neutral sentence equivalent to it within the necessitist's metaphysical theory.

Since CON and NEC are mutually inconsistent but individually consistent, inevitably some biconditionals will be theorems of NEC but not of CON, and others will be theorems of CON but not of NEC. In such cases, the side for which $A \leftrightarrow B$ is a theorem will regard the other side as misdescribing the distinction they mark by applying A but withholding B or *vice versa*.

The derivations of F3 and F6 address Fine's reasonable question as to why each side should want a neutral *equivalent* of each sentence A within the other's theory, rather than simply looking at all the neutral *consequences* of A within the theory. Equivalents in the sense of F3 and F6 are needed to capture the *distinctions* the other side is marking but misdescribing. Without F3, F1 would not hold (since F2 is unproblematic), and without F6, F4 would not hold (since F5 is unproblematic). If two sentences with the same neutral consequences were not equivalent within the metaphysical theory, no distinction they marked could be captured in neutral terms.

Of course, as Fine indicates, we should aim to get more precise about where the pressure on each side is coming from to regard the other side's discourse as marking genuine distinctions. It does not come simply from the bare nature of the metaphysical doctrines of necessitism and contingentism, for we have already seen that some versions of each put no such pressure on the other side. Instead, the pressure should come from more specific successfully working theories whose core of modal metaphysics is CON or NEC — somewhat as the pressure on nominalists to capture distinctions made in platonist mathematical terms comes from successful applications of mathematics in the natural and social sciences. *Modal Logic as Metaphysics* does not attempt to provide the details, but elsewhere I argue that applications of probability theory and dynamical systems theory in the natural sciences implicitly take for granted

a necessitist modal logic (Williamson 2016). It is also plausible that much contingentist discourse marks genuine distinctions, even if it misdescribes them.

Since the pressure to capture the distinctions marked by the other side's discourse comes from various specific necessitist and contingentist theories, we should not expect the neutral zone to be constant irrespective of the specifics of those theories. What is in dispute between one contingentist and one necessitist need not be in dispute between another contingentist and another necessitist. I allow for this by giving only a broad, deliberately schematic characterization of the technical term ('chunky') used to demarcate the neutral zone (Williamson 2013, 314). The book provides a template that can be applied to many specific versions of contingentism and necessitism. As Fine points out, various specific characterizations of the chunky contemplated in the book will not fit all versions of contingentism, but that was only to be expected. Only when contingentists starts fleshing out the barebones doctrine of contingentism in reasonable ways is there good reason to view them as marking genuine distinctions. This dependence on the version of contingentism at issue also means that his offer of his more rarefied sense of 'actual' in place of 'chunky' is unlikely to do the job, precisely because it does not depend on the specific versions at issue. In any case, since his introduction of his sense of 'actual' presupposes necessitism, it seems unsuitable for demarcating the neutral ground between a contingentist and a necessitist.

There are indeed complicated and somewhat elusive problems as to why, when and how the contingentist and the necessitist need to capture each other's distinctions. But such obscurities do less harm if confined to one part of the attempt to answer the overall question (contingentism or necessitism?), as they are in *Modal Logic as Metaphysics*, rather than infecting the question itself, thereby rendering any attempt to answer it problematic. They do not counterbalance the obscurity of the issue between actualism and possibilism.

Fine suggests that no problem like those just considered arises for the attempt to assess actualism and possibilism. He explains only very briefly why not, and what he says is puzzling. He writes:

> For a 'soft' actualist like myself, by contrast, there is no such problem; for I will be willing to accept whatever the possibilist says as *true* and hence will take myself to be under an obligation to account for its truth.

This cannot be right in general, for Fine's actualist 'claims that only actual objects are real, while the possibilist denies that this is so'. When the possibilist says 'Some non-actual objects are real', the actualist Fine is *not* willing to accept 'Some non-actual objects are real' as true, on pain of contradiction (his actualist and possibilist say the same thing when they use such a sentence). Perhaps he means only that he will be willing to accept as true whatever the possibilist says *not involving 'real' and similar terms*. But then there is still a problem about the sense, if any, in which the actualist can capture the distinctions marked in the

possibilist's use of sentences like 'There are infinitely many real possible stars'. Is there meant to be some advantage in confining the differences between the actualist and the possibilist to sentences involving special metaphysical vocabulary such as 'real'?

There may be a dilemma here. First, suppose that there is no pressure on the actualist or possibilist to capture the distinctions marked in the other's use of 'real'. That would confirm the earlier suspicion that the use of the term is dangerously under-constrained. Alternatively, suppose that there is such pressure. Then the dispute between actualism and possibilism raises complicated and somewhat elusive problems as to why, when and how the actualist and the possibilist need to capture each other's distinctions, similar to the problems raised by the dispute between contingentism and necessitism.

For all these reasons, I continue to regard 'Contingentism or necessitism?' as a much better question than 'Actualism or possibilism?'

Fine formulates the rest of his paper in terms of actualism and possibilism rather than contingentism and necessitism. As he says, it is relatively ease to transpose what he says to fit the latter debate too, given the structural similarities. I will work with his formulations of his arguments here.

2. Fine's standard reduction

In Sections 2 and 3 of his paper, Fine sketches his original reduction of possibilist to actualist discourse (Fine 1977), and responds to two criticisms in *Modal Logic as Metaphysics* of an analogous attempt to map necessitist discourse to a neutral equivalent in the sense of F6, which are equally relevant to his reduction. He describes the reduction as 'translational' only in scare quotes.

My criticisms apply once the possibilist discourse goes beyond the limitations of a first-order language, in particular by the addition of a plural quantifier or other higher-order quantifiers. The initial difficulty for reducing the possibilist plural quantifier ΣV is that the modalized actualist plural quantifier $\Diamond \exists V$ is not an adequate substitute, because the former only requires some objects that individually can each be actual, while the latter requires some objects that jointly can all be actual *together*. Instead, Fine uses an infinite string of modal operators and actualist singular quantifiers $\Diamond \exists x_1 \Diamond \exists x_2 \ldots$ (for the other required adjustments of the formula see Fine 1977, 2016).

Modal Logic as Metaphysics develops two objections to the adequacy of such strings as substitutes for the original plural quantifiers. The first is that the number of variables in the string will impose an (infinite) upper bound on the size of the pluralities taken into consideration, whereas the original plural quantifier imposes no such upper bound (353–356). Fine is unsure what to say about the issues raised by this objection; he sketches but does not endorse one line of response. Partly for this reason, he no longer wishes to rely on such infinite

strings in his reduction. I will nevertheless consider his more confident response to my second objection, because it is interesting in its own right.

The second objection is to the very meaningfulness of infinite embeddings of operators. An infinite sequence of meaningful operators is not in general meaningful: the simplest example is an ω-sequence of negations ¬¬¬ … Fine agrees. However, he argues that we *can* make sense of applying infinitely many operations simultaneously, providing that they are all *independent* of each other. He says that he has no definition of 'independent', but he explains what he has in mind with examples. In one case, each operation is the syntactic substitution in a formula of a given expression for each occurrence of a given atomic expression of the same type; if no two substitutions are for the same atomic expression, the operations are all mutually independent and it makes sense to apply infinitely many of them simultaneously to an infinitary formula. In Fine's other example, each operation is the flipping of a light switch; if no two operations are for the same switch (and presumably no two switches are for the same light!), they are all mutually independent and it makes sense to apply infinitely many of them simultaneously to infinitely many light switches. Fine claims that the modalized quantifiers $\diamond \exists x_1, \diamond \exists x_2, \ldots$ — or, as he prefers, $\diamond \exists x_1 \Box, \diamond \exists x_2 \Box, \ldots$ — all perform mutually independent operations (given that the variables $x_1, x_2, \ldots$ are all mutually distinct), so that we can understand the infinite string as applying all those operations simultaneously to the semantic value supplied by the complement formula.

I have no objection to simultaneously making infinitely many substitutions or flipping infinitely many switches. The question is whether simultaneously applying infinitely many modalized quantifiers is relevantly similar to Fine's unproblematic examples. One obvious feature of the latter is that the operations are all *local*. He requires all the substitutions to be on non-overlapping constituents of the formula operated on, for otherwise things go wrong. Similarly, the flippings must all be of separate switches controlling separate lights. More generally, if a system has infinitely many non-overlapping constituents, it makes sense to perform simultaneous operations on each of these constituents. But do $\diamond \exists x_1 \Box, \diamond \exists x_2 \Box, \ldots$ perform local semantic operations in that sense? Each of them operates on a whole formula, just as other sentential operators do. When they are applied simultaneously to the same formula, their fields of operation clash. It is not enough that the variables $x_1, x_2, \ldots$ are all mutually distinct, for the simultaneous application of infinitely many quantifiers 'no x_1', 'no x_2', … is just as problematic as the simultaneous application of infinitely many negations. Thus Fine's examples are not similar enough to the case at issue to be of much help.

Consider the two modal operators $\diamond$ and $\Box$. What are we supposed to get when we apply them 'simultaneously' to a formula A? Do we get something equivalent to $\diamond \Box A$ (which is equivalent in Fine's background modal logic S5 to $\Box A$), or to $\Box \diamond A$ (which is equivalent in S5 to $\diamond A$), or something else entirely? Since there is no natural answer, $\diamond$ and $\Box$ presumably count as not

independent of each other. Similarly, what are we supposed to get when we apply $\Diamond$ and $\exists x_1$ 'simultaneously' to A? Do we get something equivalent to $\Diamond\exists x_1 A$, or to $\exists x_1 \Diamond A$ (which is not equivalent to the former, since the Barcan and converse Barcan formulas presumably fail for Fine's actualist quantifier), or something else entirely? Again, there is no natural answer, so $\Diamond$ and $\exists x_1$ presumably count as not independent of each other. For similar reasons, $\Box$ and $\exists x_1$ presumably count as not independent of each other. Thus the operators composing $\Diamond\exists x_1\Box$ are *not* independent of the operators composing $\Diamond\exists x_2\Box$. Why then should we believe that $\Diamond\exists x_1\Box$ is independent of $\Diamond\exists x_2\Box$? That would require some 'cancelling out' of the numerous dependencies between their constituents. That such cancelling out occurs in this particular combination (but not most others) is not obvious; it would require a proof, for which we have no hint. Thus the appeal to independence fails to do the work Fine requires of it.

Of course, one could interpret the simultaneous application of $\Diamond\exists x_1\Box, \Diamond\exists x_2\Box, \ldots$ as consisting in the simultaneous application of each occurrence of $\Box$, followed by the simultaneous application of the occurrences of $\exists x_1, \exists x_2, \ldots$, followed by the simultaneous application of each occurrence of $\Diamond$. Naturally understood, that is equivalent to the application of $\Diamond\exists x_1,x_2,\ldots\Box$. But, even if we forget the previous problem about cardinality, that is at best tantamount to the modalized actualist plural quantifier $\Diamond\exists V\Box$, which is a compossibility reading of just the sort that gave rise to the original problem.

If the meaning of the infinite sequence of modal operators and actualist quantifiers seems clear, it is because one finds the meaning of the possibilist plural quantifier to be reduced clear in its own right: but that is of no aid to the actualist reduction. Such an infinite sequence is equally unhelpful to the attempt to find a neutral equivalent of higher-order necessitist discourse in the sense of F6. I stand by both the objections in *Modal Logic as Metaphysics*.

3. Fine's suppositional reduction

In the second half of his paper, Sections 4–7, Fine presents an ingenious new reduction of possibilist to actualist discourse, to replace his old one. It is finitary, thereby avoiding the problems just discussed. It is also robust, because it treats the higher-order facts as supervening on the first-order facts in a way that does not depend on how exactly the higher-order facts are formulated. If the reduction works, there will be a corresponding way of giving a neutral equivalent of higher-order necessitist discourse.

Fine's new reduction uses an elaborate *suppositional calculus*, in which one can explicitly formulate complex suppositions and talk about what does or does not follow from them. The general idea is this. Let A be a formula in possibilist terms and A' be the result of replacing all the possibilist quantifiers in A by corresponding actualist quantifiers. Then A is equivalent to a formula of the

suppositional calculus saying that A' follows from a certain complex supposition $\sigma; \tau$ in actualist terms. Very roughly, $\sigma; \tau$ is the supposition that things are just as they actually are on a possibilist description, except that everything is necessarily actual (even though actualists do not believe that, they can still suppose it). Fine's account has many subtle details, for which the reader should consult his paper.

The suppositional calculus is of great interest in its own right. As Fine suggests, it may well have many fruitful applications not touching the issues between actualism and possibilism and between contingentism and necessitism. My only concern here is with the legitimacy of Fine's present application of it to those issues. I will argue that the supposition $\sigma; \tau$ cannot be understood in actualist terms, and therefore that Fine has not succeeded in reducing possibilist discourse to actualist discourse. A similar objection applies to the corresponding attempt to use the suppositional calculus to give a neutral equivalent of necessitist discourse.

To see the problem, we can examine one constituent σ_1 of $\sigma; \tau$. Fine writes it thus:

$$(\sigma_1) \quad \Pi x/\square\exists y(x = y)/$$

This needs careful unpacking. The quantifier Πx is a *possibilist* first-order universal quantifier. However, Fine uses it officially as an abbreviation of $\square\forall x\square$, where $\forall x$ is an actualist first-order universal quantifier, though with the proviso that there may be some other way of formulating what σ_1 means in actualist terms. Anyway, for clarity we may rewrite σ_1 thus:

$$(\sigma_1^A) \quad \square\forall x\square/\square\exists y(x = y)/$$

Here $\exists y$ is an actualist first-order existential quantifier. Thus we may read $\square\exists y(x = y)$ as 'necessarily x is something actual'. Putting a formula between occurrences of / forms an instruction to suppose its content. Thus we may read $/\square\exists y(x = y)/$ as: 'suppose that necessarily *x* is something actual!' Consequently, Πx in σ_1 and $\square\forall x\square$ in σ_1^A are applied to *instructions*. As Fine explains, the intended effect is (and needs to be) not to form an instruction to suppose a universally quantified content but rather to suppose each instance. Thus the intended effect of σ_1^A and σ_1^A is intended to be: 'For every possible object, suppose that necessarily it is something actual!' Can one do that?

Two initial worries are that one is being required to make too many suppositions simultaneously, and that some of those required suppositions are about objects to which one has no means of referring. However, those worries depend on a more psychologized view of supposing than Fine intends. They would be equally relevant to less metaphysically fraught instructions such as 'For every grain of sand, suppose that it is on a beach'. As Fine explains, he is treating 'suppose' as a performative. If one felicitously says 'For every grain of sand, suppose that it is on a beach', then for every grain of sand one *thereby* supposes

that it is on a beach. There is no need for many phenomenologically separate acts of supposing, one for each grain of sand. So far, Fine is within his rights.

The deeper problem is this. Possible objects, in the possibilist's sense, include some non-actual, merely possible objects. For each of those, σ_1 and σ_1^A require one to suppose something about it. But to suppose something about a non-actual object is to go beyond actualist terms. Since those suppositions are integral to Fine's plan, possibilist discourse has not been reduced to genuinely actualist discourse.

The difficulty is not confined to the component σ_1 of the overall supposition σ; τ. It also arises for Fine's components σ_2 and σ_3. Their details do not matter here, but they involve the application of possibilist universal quantifiers to conditional suppositions, where to make the conditional supposition A→/B/ is not to (unconditionally) suppose a conditional A→B, but rather if A holds to suppose B and otherwise to suppose nothing. The closest Fine comes to addressing the difficulty is in discussing the application of the possibilist quantifier to such conditional suppositions, but if what he says works for σ_2 and σ_3, it will also work for σ_1, since an unconditional supposition is equivalent to a conditional supposition with a tautologous antecedent.

Fine begins his discussion of the matter by noting that one can make sense of an indicative sentence such as $\Pi x(\lozenge A(x) \rightarrow B(x))$ in actualist terms (where A(x) and B(x) are not themselves problematic). His original reduction establishes that, since it works for first-order modal languages and the possibilist quantifier Πx is first-order. So far so good. But if the actualist can make sense of $\Pi x(\lozenge A(x) \rightarrow B(x))$, Fine asks:

> Then what is to prevent him from making sense of the corresponding supposi-
> tional sentence $\Pi x(\lozenge A(x) \rightarrow /B(x)/)$ (for every possible object x for which it is pos-
> sible that A(x) suppose that B(x)), given that the only difference between them
> lies in the substitution of a supposition for a judgement?

He is surely right that the difference between the act of supposition and the act of judgement does not matter here, for the task is to capture the *content* of the act in actualist terms, irrespective of which act it is. But what stands to $\Pi x(\lozenge A(x) \rightarrow /B(x)/)$ as judgement stands to supposition is *not* the plain $\Pi x(\lozenge A(x) \rightarrow B(x))$. For, if there are many non-actual objects x for which it is possible that A(x), then $\Pi x(\lozenge A(x) \rightarrow /B(x)/)$ expresses a complex act comprising many acts of supposing that B(x) for various non-actual objects x, whereas $\Pi x(\lozenge A(x) \rightarrow B(x))$ does *not* express a complex act comprising many acts of judging that B(x) for various non-actual objects x. The latter complex act goes outside the realm of the actual in exactly the same way as the former does. The proper notation for it would be something like $\Pi x(\lozenge A(x) \rightarrow \#B(x)\#)$, where #B(x)# expresses the act of judging that B(x) just as /B(x)/ expresses the act of supposing that B(x). Of course, one can use Fine's original reduct of $\Pi x(\lozenge A(x) \rightarrow B(x))$ to make a general judgement in actualist terms, but we have been given no reason why doing so should involve many acts of judging that B(x) for various non-actual objects x.

To take a simpler example, the actualist can make the general judgement that $\Box\forall x\Box \neg(C(x)\ \&\ \neg C(x))$ without making many individual judgements about non-actual objects. The rest of Fine's discussion of the issue remains focused on the structural analogy between supposition and judgement, and so misses the heart of the problem.

Of course, one can formulate general propositions in actualist terms about what is (actually) to be supposed: for instance, that necessarily for every actual object x necessarily if it is possible that A(x) then it is actually to be supposed that B(x). But that does not mean that the contents of the suppositions so described are themselves expressible in actualist terms. The actual may contain talk about the non-actual. Since we have been given no further reduction of B(x) for non-actual x to actualist discourse, to make the supposition /B(x)/ is to step outside actualist discourse. But making Fine's overall supposition σ; τ involves making the constituent suppositions σ_1, σ_2 and σ_3, which in turn involves making constituent suppositions of the form /B(x)/ for non-actual x. Thus making Fine's overall supposition σ; τ involves stepping outside actualist discourse. Fine reduces a sentence A in possibilist discourse to the claim that the sentence A' in actualist discourse follows from the supposition σ; τ. But since making that supposition involves stepping outside actualist discourse, we have not been given a reduction of possibilist to actualist discourse in any useful sense.

The same problem arises when Fine's strategy is applied to the search for neutral equivalents of necessitist discourse. The contents of the relevant suppositions or judgements about individual non-actual objects fall outside the neutral zone, and so cannot be legitimately used. The neutral zone may contain talk about matters outside the neutral zone. The strategy does not give us neutral equivalents of necessitist discourse in any useful sense.

References

Fine, Kit. 1977. "Prior on the Construction of Possible Worlds and Instants." In Arthur Prior and Kit Fine *Worlds, Times and Selves*, 116–168. London: Duckworth.

Fine, Kit. 2009. "The Question of Ontology." In *Metametaphysics: New Essays on the Foundations of Ontology*, edited by David Chalmers, David Manley, and Ryan Wasserman, 157–177. Oxford: Oxford University Press.

Fine, Kit. 2016. "Williamson on Fine on Prior on the Reduction of Possibilist Discourse." *Canadian Journal of Philosophy* 46 (4–5): 548–570.

Stalnaker, Robert. 2012. *Mere Possibilities: Metaphysical Foundations of Modal Semantics*. Princeton, NJ: Princeton University Press.

Williamson, Timothy. 2000. "Existence and Contingency." *Proceedings of the Aristotelian Society* 100: 117–139.

Williamson, Timothy. 2007. *The Philosophy of Philosophy*. Oxford: Blackwell.

Williamson, Timothy. 2013. *Modal Logic as Metaphysics*. Oxford: Oxford University Press.

Williamson, Timothy. 2016. "Modal Science." *Canadian Journal of Philosophy* 46 (4–5): 453–492.